DECEMBER, 1956

WOOD and Wood Products

THE NATIONAL MANAGEMENT AND PRODUCTION MAGAZINE OF THE WOOD INDUSTRY

A Vance PUBLICATION

FEATURES IN THIS ISSUE

- Integrate Finger Jointing and Edge Gluing
- Conveyorized Rough Mills Up Production, Yield, Quality
- The New Look in Furniture Packaging
- Gluing Untreated Red Oak at Fiber Saturation Point
- New Products—Trends—Dry Kiln Corner—Production Line

WOOD SALUTES
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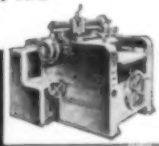

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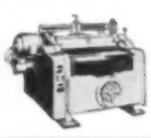

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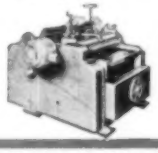

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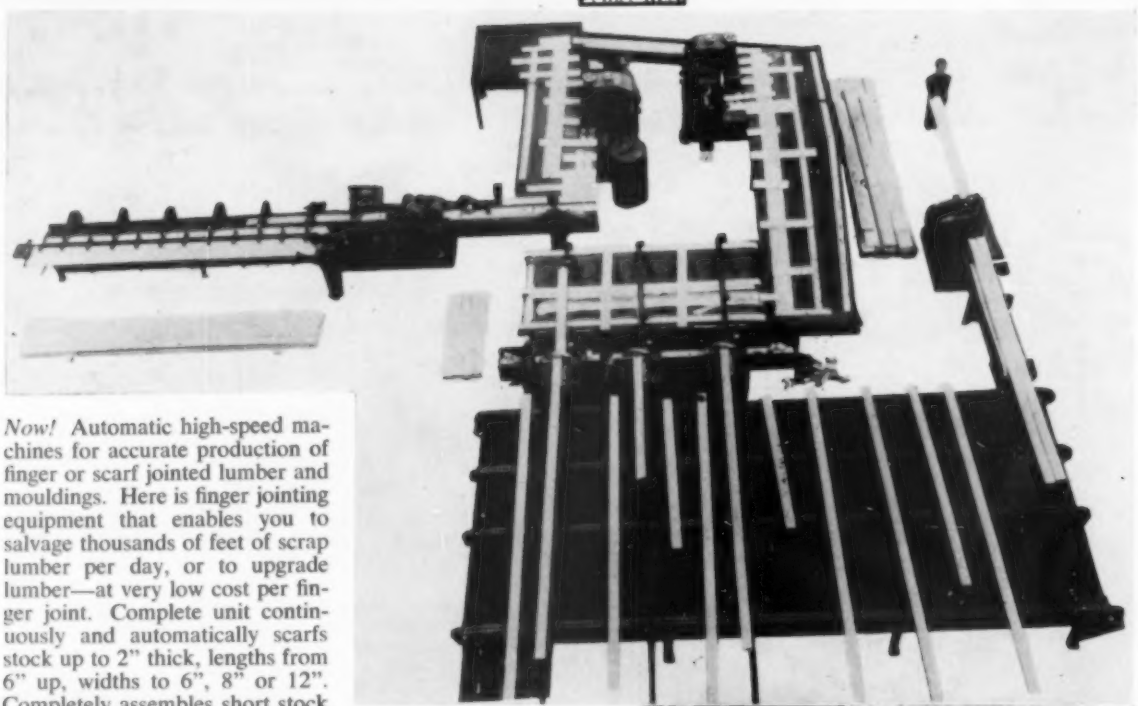

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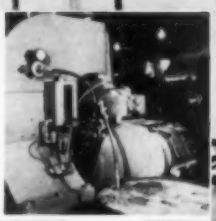
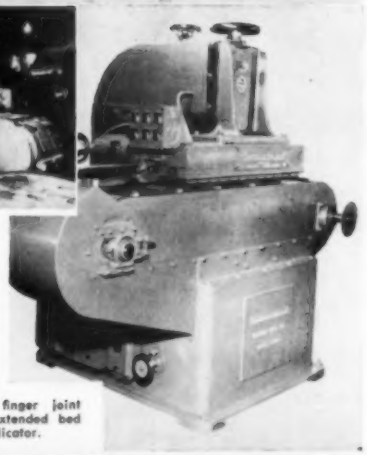


Inset: Automatic glue applicator mounted on shaper

Above: Model 86 (6") assembly machine. Also available for 8" and 12".



Right: Basic finger joint shaper with extended bed for glue applicator.

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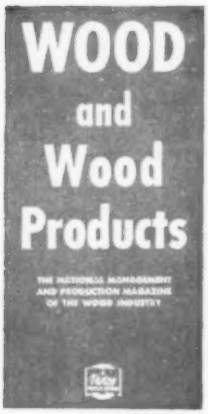

DECEMBER, 1956

Vol. 61, No. 12

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Published monthly at 1309 N. Main St., Pontiac, Ill. with Executive and Editorial offices at 139 N. Clark St., Chicago 2, Ill., by Vance Publishing Corp. OFFICERS: Herbert A. Vance, president and treasurer; Arthur A. Hood, vice president; A. E. Monetti, secretary. Annual subscription postage paid rate in United States, Possessions and Canada $4.00. All other countries in the Universal Postal Union $10.00. Single copies 50 cents. Copies of issues prior to current year, if available, $1 each. In changing address, give old as well as new address. Note: each subscriber receives a mail notice from the publishers in advance of the expiration of subscription. Established 1896. Entered as second class matter, November 7, 1951, at the Post Office, Pontiac, Illinois, under the act of March 3, 1879. Copyright 1956 Vance Publishing Corp.

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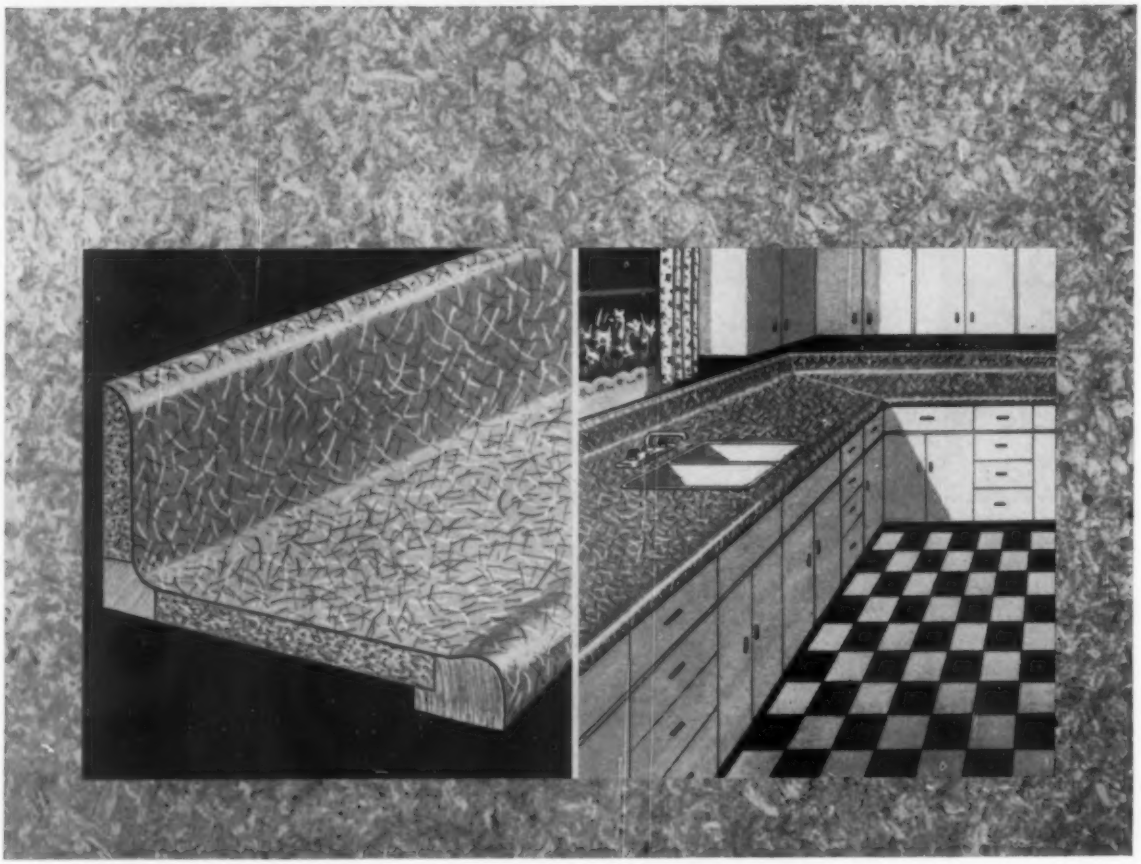

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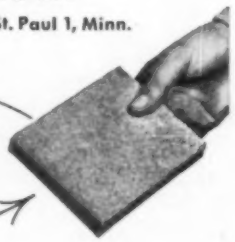

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VOL. 61, NO. 12

WOOD and Wood Products

DECEMBER, 1956

INDUSTRY NEWS... ...AND TRENDS

VENEER-PLYWOOD

FACE VENEER PRODUCTION fell off sharply in September from August . . . in fact it was the second lowest monthly output of the year. Cherry veneer production fell after setting a record in August. Cherry shipments should continue strong through balance of fourth quarter.

African mahogany veneer production and shipments perked up considerably in September from June and July lows—it remains the most widely-used face veneer today.

Honduras Mahogany production rose in September. Supplies, while not large, are said to be able to take care of present demand.

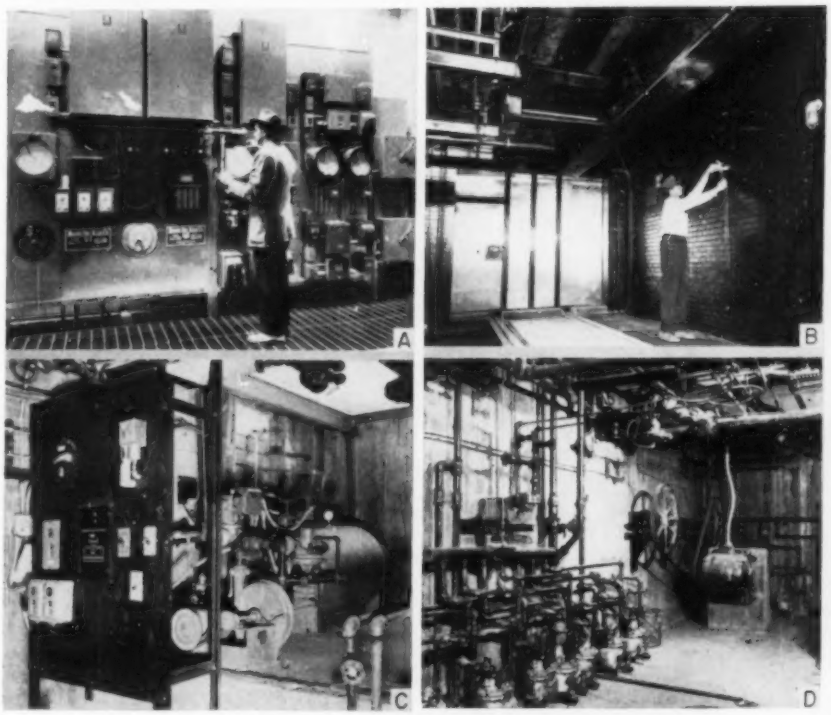
American walnut veneer is still favored, in quarters and flat cut. Production fell sharply from August highs, trailing behind consumption which has been heavy throughout the year.

Supplies of tropical American mahogany lumber are tight.

DESPITE 15% PRICE TUMBLE some Northwest plywood mills are talking of raising prices. Already some small mills have issued higher price lists.

Big companies, however, have made no official moves to post higher prices. In fact, one major firm is said to be allowing an extra 5% off present price in order to move its large volume into retail channels.

Two facts said to be holding back general increase in fir plywood prices are: (1) this is slow selling time of year, (2) plywood mill order backlogs still average little more than three weeks' capacity.



New Syracuse University Wood Products Laboratory Dry Kilns

FOUR DRY KILNS are contained in the new $4 million, L-shaped Hugh P. Baker Memorial Wood Products Laboratory at the State University College of Forestry, Syracuse University campus. The views here (first ever taken) show Dr. Harold B. Gatslick (A) placing chart in one of recording controllers of main control board and (B) affixing wick to wet-bulb-measuring element. (C) Close-up view of control panels and gas-or-oil-fired kiln heating unit. (D) Dry kiln pit, showing external fan system for below track kilns, the extensive steam-trapping system required, and steam flow meter equipment

CONSTRUCTION

RESTRICTIONS AGAINST USE OF LUMBER and wood products in building construction should be wiped out and the head of the nation's largest carpenters' union has proposed that lumber manufacturers and union leaders join in a vigorous campaign to bring it about.

Maurice A. Hutcheson, president, United Brotherhood of Carpenters and Joiners, has invited the lumber industry to work with his 850,000 members in a cooperative program aimed at stepping up promotion of lumber and wood products in all phases of the building picture.

HOME REMODELERS are expected to spend $15 billion by the end of 1956 in the Operation Home Improvement drive in 1,000 cities . . . 25% more than last year. Big factor behind the boom in remodeling work is believed to be the OHI drive launched last January.

NEW BUILDING CODE designed to meet requirements and climatic conditions of Midwest states will be issued early in 1957. A draft of the new code as submitted by Committee at recent meeting of Midwest Conference of Building Officials in Chicago was accepted.

The new code will contain provisions regulating construction of build-

ings of all types and occupancies based on minimum requirements. It will be simple in form, assuring ease of administration and understanding, it is reported.

HOME BUILDERS expect higher price tags on house construction in 1956, they are uncertain how many new houses they will build next year, they expect housing starts to be down from this year's anticipated output of 1,100,000 new homes, they expect to sell every house they build in 1957, and sales next year will be as good or better than 1956.

These conclusions are based on a survey of 600 home builders made by the National Association of Home Builders. The survey also discloses that the median price of the 1957 house is expected to be about $15,200 compared to $14,700 for 1956—an increase of 3.4%

RAPID DECLINE in housing starts under FHA and VA programs has been called a "national tragedy" by George E. Price, president, Prefabricated Home Manufacturers' Institute. He blames the decline on uneven effect of government monetary controls and has called on Congress to end the discrimination "against a large and important group of American families seeking to buy their homes under FHA and VA".

Federal Housing Commissioner Mason, however, insists that the housing situation as seen by FHA is "good". Although new home production this year is down, he says 1,100,000 to 1,200,000 rate is still high.

HOUSING STARTS FOR 1956 when the final figures are in, will probably reveal 1,050,000 to 1,100,000 new private homes have been started according to Joseph B. Haverstick, president, NAHB. This is about 250,000 units below 1955. The industry faces many uncertainties next year, he continues—due mainly to the tight mortgage credit situation as well as the trend toward higher-priced homes; consumer demand for bigger and more costly homes, and whether the terrific industrial expansion will continue, thus draining mortgage money away from home building industry.

to help you select the proper mortising and boring tools for fast, accurate production

Here's a handy guide you'll want for regular reference. New GREENLEE Catalog 34-M gives complete information on hollow chisels and bits, router bits, machine bits and drills, dowel bits, countersinks, plug cutters, and other high-quality tools that increase efficiency of woodworking machines.

This well-illustrated, 20-page book shows tools in detail . . . quickly gives data on sizes and types for easy selection of tools best suited to your work. Also includes tool sharpening instructions and a helpful wood screw boring chart.

If you haven't a copy, or need more copies, write today for Catalog 34-M. Greenlee Tool Co., Division of Greenlee Bros. & Co., 2162 Herbert Ave., Rockford, Illinois.

TOOLS FOR CRAFTSMEN
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FURNITURE

FURNITURE INDUSTRY should set a new record for 1956. At the end of the first nine months of 1956, orders, factory shipments and employment are all headed for new records.

While the industry has not continued to maintain its wide rate of gain enioved during the earlier months of 1956, shipments at end of third quarter are still a full 10% ahead of same period 1955. The following shows the trend of orders and shipments during the three quarters in 1956 compared with those in 1955:

	Percentage increase over 1955	
	Orders	Shipments
At end of first quarter	15%	21%
At end of second quarter	10%	15%
At end of third quarter	6%	10%

September orders fell 7% below those placed in August, shipments held about even with August, whereas unfilled orders were down 5%. Year to year comparisons show new orders down 7% from September 1955 level, unfilled orders down 4%, and shipments down 1%.

BRISK BUSINESS at Chicago fall market was reported by some manufacturers. Early American furniture and upholstered piece manufacturers showed the best volume. Case goods bookings were generally off. Designwise new case goods leaned toward modern, with fine woods, elegant styling with added curves and decorations much in evidence. Upholstered furniture featured more exposed wood surfaces and trimmer lines than heretofore.

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LUMBER

SOUTHERN PINE LUMBER PRODUCTION in the states of Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North and South Carolina, Oklahoma, Tennessee, Texas and Virginia, during the first nine months of 1956, based on unofficial estimates is sufficient to build one million homes.

NATIONAL LUMBER PRODUCTION totaled 3,147 million bd. ft. during September 1956, according to estimates of the National Lumber Manufacturers Association. The September lumber output was 11% below both the months of August 1956 and September 1955. Total shipments by lumber manufacturers in September were down 12% from August and 17% from September 1955. New orders received by the mills during September 1956 were 8% less than in the previous months and 16% below the corresponding month in 1955.

For the first nine months of 1956, an estimated national production of 28,594 million bd. ft. of lumber was 4% below the corresponding 1955 period. Shipments during the first nine months of this year were 2% less than the 1956 output, while new orders were 3% less than production.

During September 1956, shipments of lumber were 9% less than production while new orders were 8% below the output.

WEST COAST LUMBER production in October was 179,287,000 bd. ft. or 96.6% of the 1951-1955 average. Orders averaged 173,386,000 bd. ft.; shipments 168,158,000 bd. ft.; weekly averages for September were: Production 181,058,000 bd. ft.; 97.6% of the 1951-1955 average; orders 164,227,000 bd. ft.; shipments 167,149,000 bd. ft.

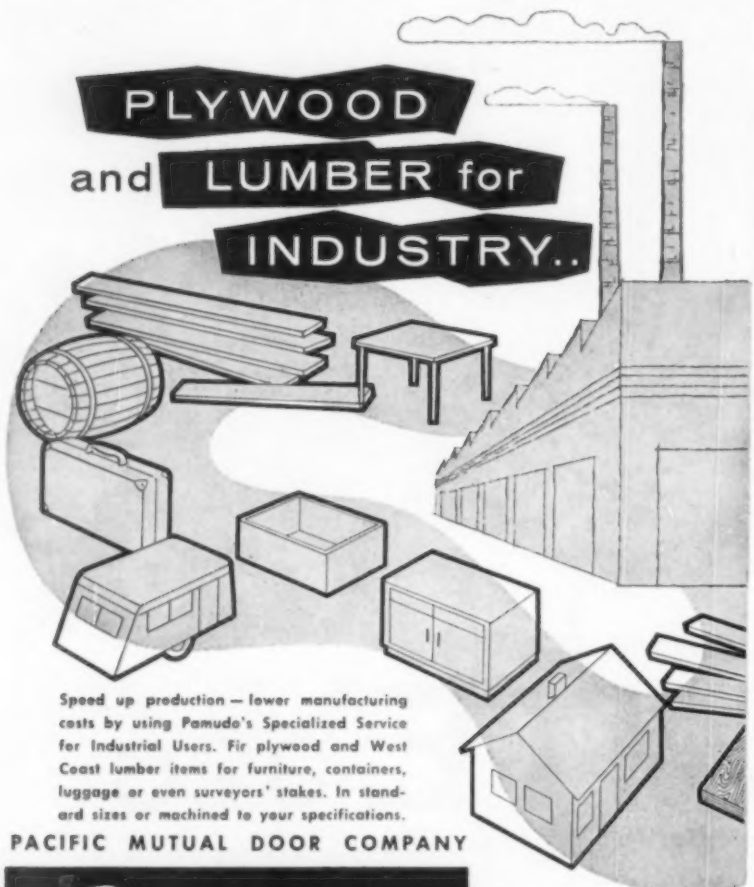
Ten months of 1956 cumulative production 7,754,472,000 bd. ft.; ten months of 1955, 8,206,475,000 bd. ft.; ten months of 1954, 7,168,338,000 bd. ft.

REDWOOD PRODUCTION and shipments for September 1956 were all less than the preceding month and the corresponding month of last year. During September production was 55,958 M ft.; shipments totaled 46,405 M ft.

Comparison with September 1955 shows a decrease in production of 5,509 M ft., and a decrease in shipments of 4,584 M ft.

FORESTRY

WISCONSIN INDUSTRIAL FORESTS, with a total acreage of 855,000 acres and approximately 57 million trees planted, show an increase of 40,000 acres over last year's total.



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WOOD PUZZLERS

This department is designed to help find answers to your production and sales problems. Let us know what information you need. Other readers may be able to help you.—*The Editors.*

213—Wood Shaping

We would appreciate your assistance on a wood shaping problem. We enclose two sample pieces. Can you recommend a machine which will shape piece "A" from piece "B"? These pieces are made from briarwood so we must work with small pieces rather than endless lengths. (*N.C.*)

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LETTERS to the EDITOR

Wants Barrel Bung Stock

Editor: We are very anxious to locate manufacturers of Appalachian poplar who can supply carloads of 4/4 random widths and lengths for barrel bungs. This material must be kiln dried or 90 days air dried, and a National Hardwood Association inspection certificate furnished with each shipment. Each carload must contain 40% #1 Common, 40% #2A and 20% #2B Common. Anything you can do to locate a source of supply would be greatly appreciated.

—S. G. Q., Canada

Contour Bandsawing

Editor: In the September 1956 issue of WOOD AND WOOD PRODUCTS you have an article on page 74 about contour bandsawing. Would it be possible for you to advise me where I can get further information about this?

—J. E. Batson, Production Mgr.
Kittinger Co., Inc.
Buffalo, N. Y.

"How to Get Top Yield"

Editor: We would appreciate having two reprints of "How to Get Top Yield from Rough Lumber" by V. E. Noltemeyer.

—W. C. Arnold, Purchasing Agt.
Connor Lumber & Land Co.
Wausau, Wis.

Molded Drawers

Editor: Some time ago your publication carried an article or ad on drawers for furniture and cabinets that were molded of a plastic material. Where can we get more information on this type of item?

—E. F. Rebholz
Advertisers Displays and Exhibits Inc.
St. Louis, Mo.

Epoxy Melamine Finishes

Editor: We are interested in the epoxy melamine type coating and special mixing type spray gun to apply this material, as mentioned in the article on page 25 of October WOOD & WOOD PRODUCTS. Could you supply us with the name and address of the suppliers of both the material and the spray equipment?

—L. F. Eddings
Eddings'-Archery Co.
McGregor, Iowa

Sawmill Automation

Editor: Thanks very much for your letter of Oct. 12 and the accompanying reprint of Mr. Mater's article, "Sawmill Automation . . . What's in It for You?". The article is so interesting that we would like to send copies to our board of directors and other interested personnel within the company and, therefore, would like to get about ten more copies if they are available. Thank you.

—L. B. Austing, Vice-Pres.
Vulcan Corp.
Cincinnati, Ohio

Automatic Saw Gauge

Editor: The automatic saw gauge described on page 82 of your October issue created much interest in our plant. Would you please provide us with full detailed information concerning construction and installation of these gauges, or with the manufacturer's name and address?

—J. R. Saindon
Roddis Plywood Corp.
Marshfield, Wis.

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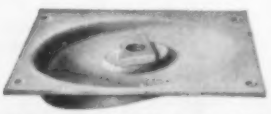

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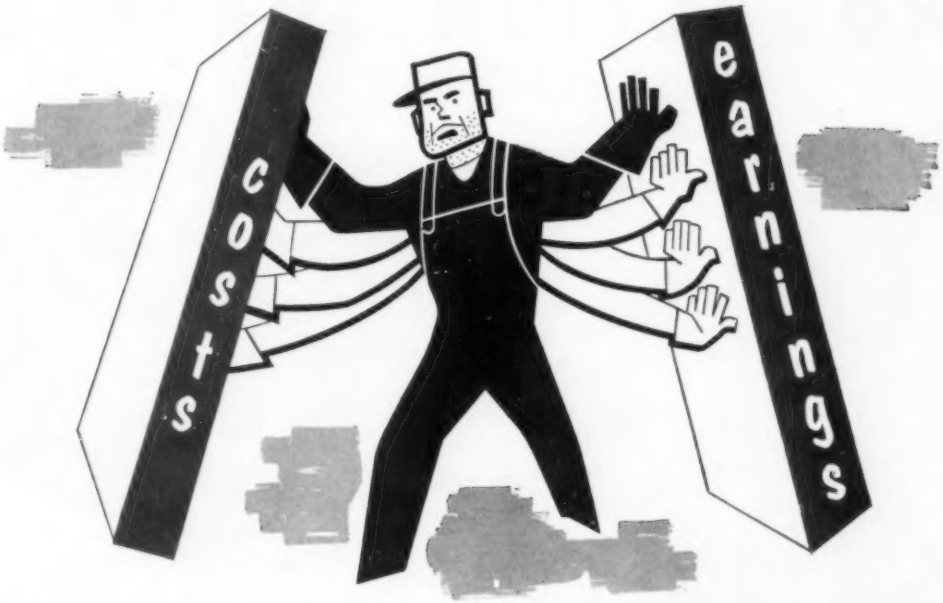

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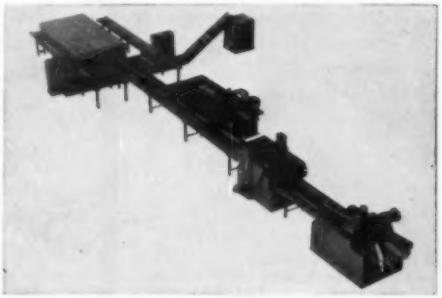

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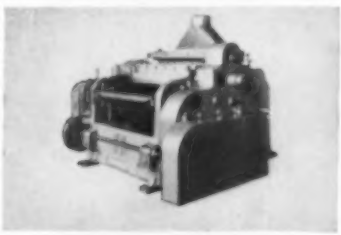

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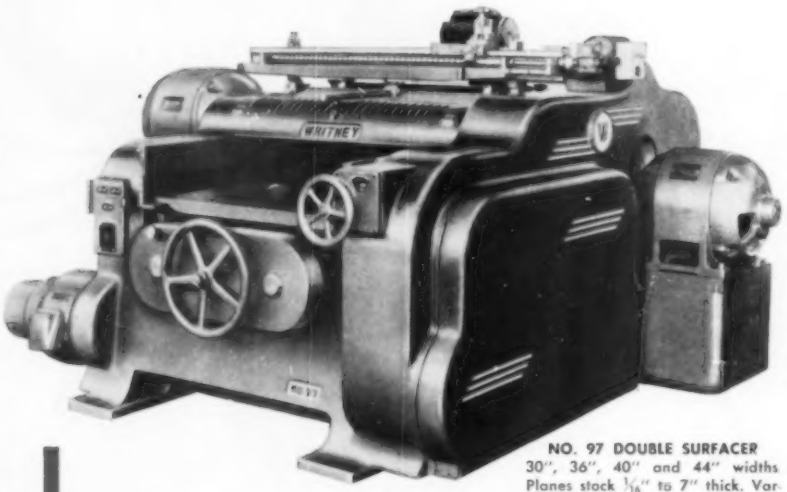

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Forest Products Week . . . Yes or No?

It is too early to report any substantial response to our proposal for a National Forest Products Week in November Wood & Wood Products. But what we saw and heard at last month's annual meeting of the National Lumber Manufacturers Association in Washington, and the early returns from our editorial call for action, indicate that the proposal is worthy of serious consideration.

Most industry leaders interviewed believe that there is a genuine need for an annual national event recognizing the importance of forest products. Some idea of the impact such an observance might have on the general public was seen in the unqualified endorsement which the National Forest Products Week proposal received from Arthur "Red" Mottley, publisher of Parade Magazine, in his challenging talk at the official NLMA luncheon.

As we envision a National Forest Products Week at this early stage, it shapes up more logically as a nationally co-ordinated "grass roots" program than as a lavish national advertising and sales promotion campaign. To be sure, an overall national committee with a modest staff would be needed to lay down the broad outlines and to coordinate and spearhead the various state, regional or special group activities. But there would be no compulsion for any group to push products or interests which they regarded as competitive to their own. Each group would promote its own type of product. All would identify themselves with National Forest Products Week through a single emblem or slogan. The cumulative impact of all these individualized efforts concentrated in a single week would be tremendous.

In addition, every company that makes or sells a product stemming from our forests would during that week sponsor some individual local effort or event. This would serve to win wider public understanding and appreciation in the particular community or area for the company's product, for its basic material, for the contribution which the individual establishment and its employees make to the community, for the industry behind the company, and for the great renewable national resource of our forests.

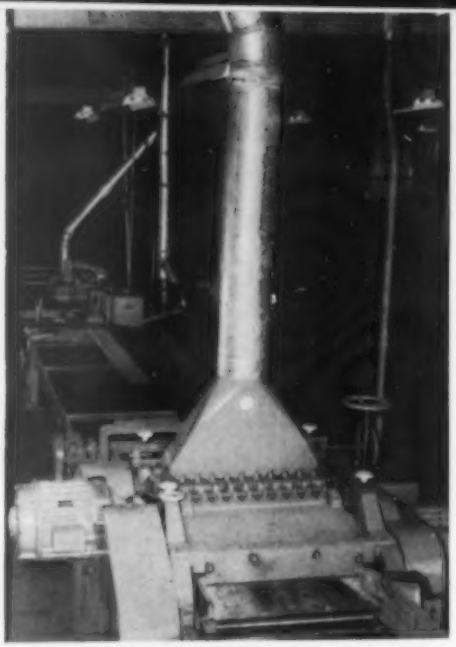
Running through it all would be the basic story of our forests as a great national asset and the progress we have made in conservation and replenishment of those forests through modern enlightened management, the variety of useful products which we derive, directly and indirectly, from our forests, the size and scope of the industry and its importance to our national economy, and finally, what it all means to the local community or area and its people and businesses.

Properly planned, organized and directed, an annual National Forest Products Week would by its very nature promote *all* forest products, and thus would go far toward unifying the many scattered elements of the industry. It would win greater recognition of the industry as an economic force, and would contribute heavily to the recovery and broadening of our markets. It would have far-reaching benefits that would more than justify the active support and participation of everyone who has a stake in wood and other products of our forests.

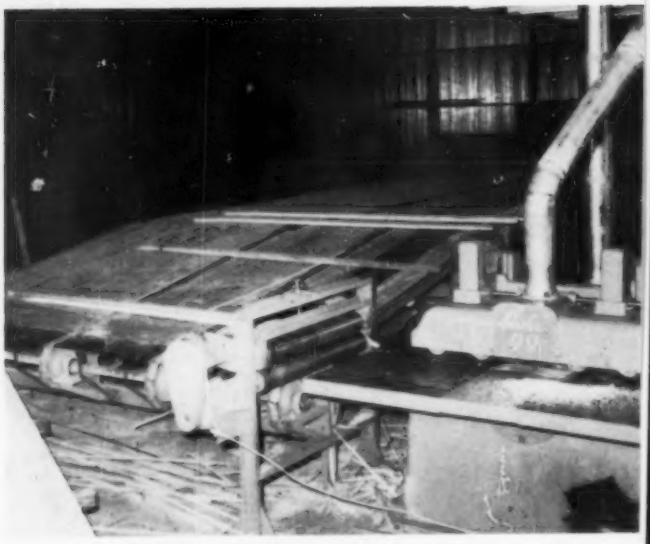
In a cross-section of industry reaction which we shall publish as a special report in January Wood & Wood Products, we want to include *your* thoughts on the proposal for a National Forest Products Week.

Do you favor the idea? Would you cooperate to make it a success? Is there an existing group or association which should logically sponsor such a week – or should a special body be set up? Do you have ideas to offer that would be appropriate for such a week?

Let's hear from *you* – now!



1 LUMBER FROM FREIGHT car moves by conveyor through double surfacer, then to pineapple feed table which feeds gang ripsaw



2 LUMBER IS PULLED from gang ripsaw by power feed rolls which take stock onto conveyor which cross conveys it to cutoff saws

Finger Jointing and Edge Gluing Integrated in Trailer Plant

New conveyorized unit permits Spartan Aircraft Co. to save $1,200 per day, use all scrap over ⅝ in. wide—Report 95% less warpage and no delamination

AN AUTOMATIC FINGER JOINTING and edge bonding operation recently installed at Spartan Aircraft Co., Tulsa, Okla., is not only enabling the company to build better quality into the deluxe mobile homes it produces, but also it is saving the company about $1,200 per day.

The Spartan Co. has built over 50,000 mobile homes since the end of World War II—as well as everything which goes into them except, hardware, plumbing and lighting fixtures.

The woodworking operation according to Vernon Crow, departmental superintendent of wood manufacturing, fabricates about 4½ million ft. of birch plywood, a million bd. ft. of lumber and about 1½ million ft. of fir plywood each year.

Before the installation of the finger jointing unit, Spartan bought only first and second selects from which they got a yield of 65 to 70%. But nowadays, with the new finger-jointing unit, they're getting a comparable yield from No. 1 common.

"We use about a carload or 20,000 ft. of lumber per day," explains Mr. Crow. "If we save $60 a thousand, $60 × 20 equals our savings per day."

But Spartan is enthusiastic about the new setup for other reasons. There is 95% less warpage. There is no delamination. And when used as faces for small doors and drawer fronts, and a chipped edge occurs, they have solid lumber to work with.

Nowadays all scrap from the ripsaws is swept up. Anything ⅝ in. or wider is saved, finger-jointed, glued up into panels and used for structural parts such as drawer sides and backs, and detail parts that are hidden. The finger-jointed parts are not used where the jointing will show.

All lumber entering the plant is processed through the system. Conveyorization begins when the lumber is unloaded from the freight car, and placed on a belt conveyor which moves it through a double surfacer, then onto a pineapple feed table which feeds it to a gang ripsaw. Lumber is pulled from the gang ripsaw by power feed rolls which take the stock onto a conveyor which cross conveys it to three cutoff saws. Up to this point the lumber has not been touched by human hands since it left the freight car.

At this point operators cut out clear lengths. Specified lengths of clears are moved by the operators to limits at their left, and are picked up by conveyors which carry them backwards to be stacked.

Any knots are cut out by these same operators. Scrap falls to a scrap conveyor at the side, and usable shorts drop into a V-shaped trough with a conveyor in its bottom which dumps the stock on another conveyor which, in turn, carries the stock to the first finger cutting machine. As the stock leaves the first machine, it drops onto a cross conveyor which carries it to

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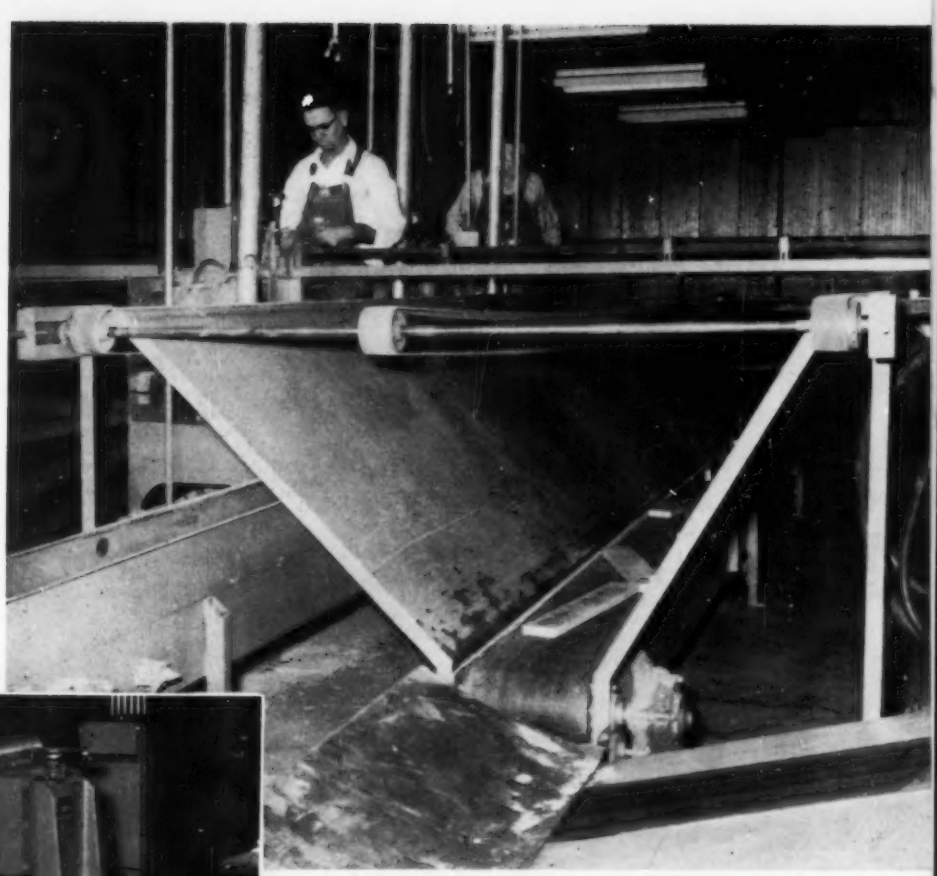
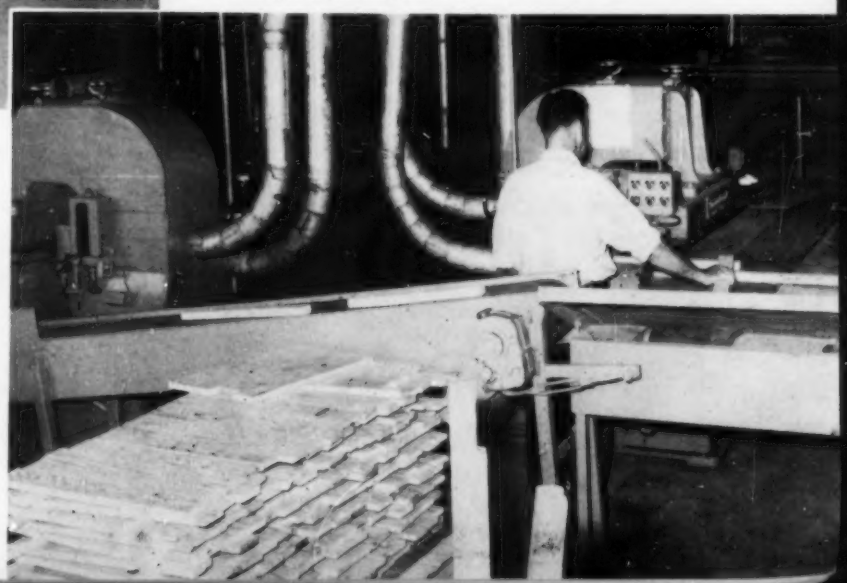


3 OPERATORS MOVE CLEARS to limits at their left where conveyor belts carry them backwards to be stacked. Shorts fall onto conveyor at bottom of V trough. Scrap conveyor is at left of V trough

4 FIRST FINGER CUTTING MACHINE operator takes stock from conveyor, feeds it to machine, as it emerges it is picked up by cross conveyor and . . .

5 CARRIED TO SECOND finger cutting machine where operator feeds it for second cut. Glue is applied as stock emerges from this machine



the second finger joint cutting machine.

Glue is applied as the stock emerges from the second machine. The short is then conveyed to the operator who feeds the assembly machine.

The assembly machine, incidentally, can be operated at any rate of speed from 40 to 80 f. p. m., depending on the skill of the operator. The machine handles any length of stock from 8 in. up to 16 ft.

The attached chop saw can be preset to cut stock to any desired length.

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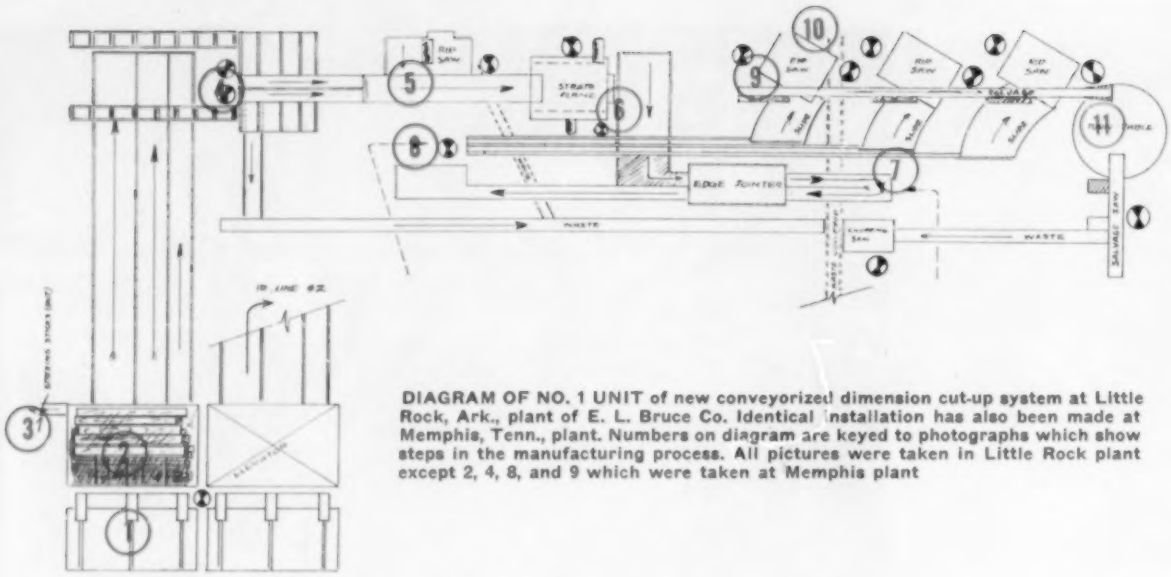


DIAGRAM OF NO. 1 UNIT of new conveyorized dimension cut-up system at Little Rock, Ark., plant of E. L. Bruce Co. Identical installation has also been made at Memphis, Tenn., plant. Numbers on diagram are keyed to photographs which show steps in the manufacturing process. All pictures were taken in Little Rock plant except 2, 4, 8, and 9 which were taken at Memphis plant

How Conveyorized Rough Mills Up Production, Yield, Quality

Twin cut-up units installed by E. L. Bruce Co. at Little Rock and Memphis plants eliminate costly handling of stock during ripping operation

NOT ONLY HAS INSTALLATION of two new identical conveyorized cutup units at the Little Rock, Ark., and Memphis, Tenn., plants of E. L. Bruce Co. permitted use of 30 to 40% more lumber in the dimension operation but also it has:

(1) Increased Production—because it has speeded dimension stock directly to the different manufacturing operations.

(2) Increased Yield per Man Hour —because there is less waste now than previously.

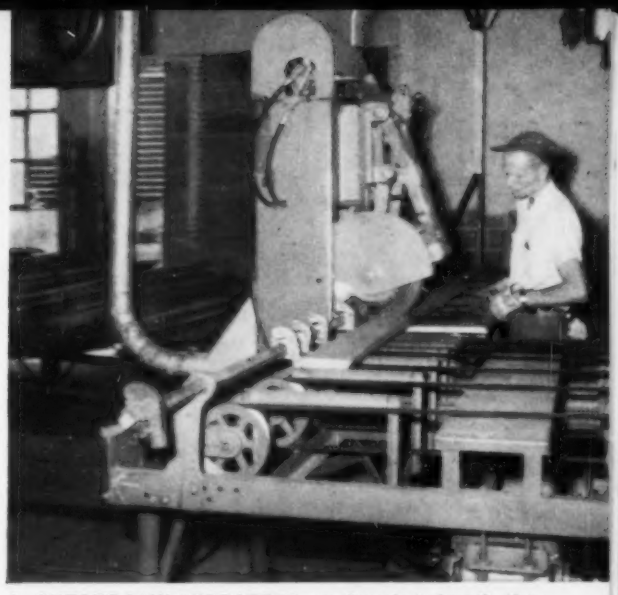
(3) Improved Quality of Products —because superior glue joints now obtained result in fewer culls.

Biggest advantage of the new systems, however, according to R. F. Day, manager of the Little Rock plant, has been elimination of costly time-consuming extra handling of stock during the ripping operation.

1. **STACKS OF LUMBER** are brought from cooling shed by lift truck and rolled onto tracks which lead to these tilt hoists which "tilt" the stacks forward, then "hoist" them to top of incline

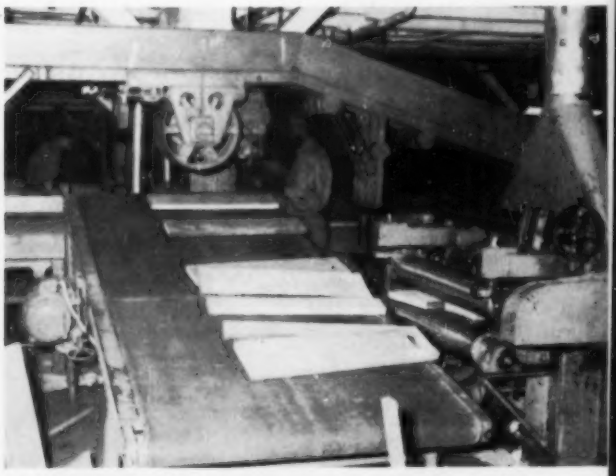
2. **TILT-HOIST OPERATOR** presses a button and one layer of lumber slides from stack down track onto conveyor chain which leads to two cutoff saws. Stacking sticks fall through tracks into trough below

3. **STACKING STICKS** are moved by conveyor belt in bottom of trough to receptacle outside dimension plant. Here they remain until picked up later and returned to lumber stacker to be used again



4. **CUTOFF SAW OPERATORS** saw boards to length, then several belts quickly pull boards to rear of saw operator where they drop onto conveyor which takes them to surfacer

5. **ENROUTE TO SURFACER**, cupped boards, boards with bark or other obvious waste are detoured through busting saw. Boards then drop onto sideline conveyor which returns them to surfacer conveyor



6. **BOARDS COMING** from surfacer drop onto inclined conveyor which carries them to another conveyor which, in turn, feeds jointer. Boards drop onto jointer conveyor edge down and pass over jointer

Nowadays the dimension stock which was formerly loaded on flats and wheeled to and from the different manufacturing operations is carried to within arm's reach of workers by means of conveyor belts.

Even more important, the new system permits a complete reversal in the manufacturing process in the initial phase of the dimension operation. Previously lumber brought to the dimension plant from the cooling shed was first lineally ripped, then surfaced, and finally cut to length before going to the glue room.

This procedure necessarily resulted in a considerable amount of waste. Lumber which was cupped or warped would not yield perfectly straight edges when cut to length, and would not provide a good glue joint.

Under the new system, lumber is first cut to length, then surfaced, and finally ripped. The addition of a busting saw between the cutting and surfacing operations now allows cupped and warped boards to be squared, and thus eliminates a large portion of bad glue joints.

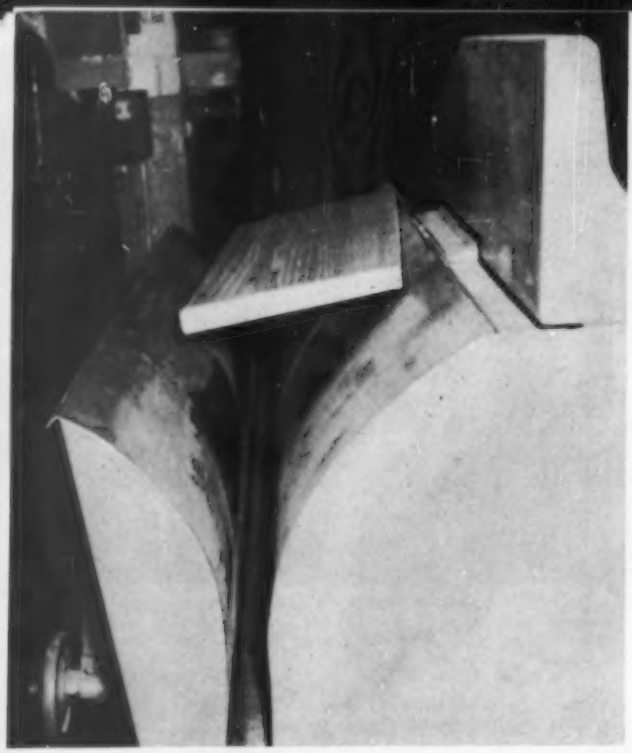
The new method also provides a more uniform thickness of dimension stock and sends a wider average width board to the glue room or cabinet planer.

Production begins in the new conveyorized operation when lift trucks deposit lumber from the cooling shed onto tracks leading to tilt hoists which, in turn, tilt the stacks forward, then hoist them to the top of an incline.

When the tilt-hoist operator presses a button, one layer of lumber slides from the stack down a track onto a conveyor chain which leads to two cut-off saws. Stacking sticks fall into a trough below, where a conveyor belt carries them to a receptacle outside the dimension mill. Here they remain until picked up later and returned to the lumber stacker to be used again.

Meanwhile, the conveyor chain pulls a steady stream of lumber to the cutoff saws where boards are sawn to length. This operation, before ripping, eliminates many bad glue joints.

After the boards have been sawn to length, several belts quickly pull



7. **AFTER ONE EDGE** is jointed, conveyor carries boards up incline to this jointer return which flips them onto another conveyor which carries them to second jointer which joints opposite or second edge

9. **AS BOARD REACHES** proper ripsaw, it leaves conveyor and slides down chute. Operator needs only move his hand a few inches to pick up board and feed it into his ripsaw

them to the rear of the saw operators and drop them onto a conveyor which carries them to a planer where they are surfaced.

Any cupped board or boards with bark or other obvious waste are detoured through a busting saw. The boards then drop onto a sideline conveyor which returns them to the planer conveyor.

As the boards emerge from the planer they drop onto an inclined con-

Continued on Page 48

8. **AFTER BOTH EDGES** are jointed, boards are deposited in trough beside operator who sorts and places boards, according to length, in one of three slots. Each slot feeds a different ripsaw

10. **WHEN BOARDS ARE RIPPED,** dimension stock is placed on flats for delivery to glue room or cabinet planer. Edgings are thrown into common conveyor which delivers them to salvage saw

11. **EDGINGS FROM COMMON** conveyor drop onto this turntable which rotates slowly to bring edgings within reach of salvage saw operator who recovers all usable lumber. Any remaining waste is used for fuel

Today's pressure pack carton is durable enough to withstand rail and truck travel, yet simple, economical, and light in weight

The New Look in Furniture Packaging

By SAM W. FREEMAN
Drexel Furniture Co.

THE PACKAGING OF FURNITURE case goods has greatly changed during the past decade. A few years ago, packaging consisted largely of wrapping a sheet of kraft paper loosely about the case and then partially confining the poorly protected case inside a heavy, cumbersome cage made of low grade, rough and sometimes wet lumber. The typical furniture package until recent times was a poorly done job.

The great improvement in packaging has gone hand in hand with a marked improvement in the general excellence of case goods. As might well be expected, today's finest furniture rides in today's finest package—a package which lends itself to production methods in its application, which is consistent with good cost practice, which is clean, light in weight and attractive to the eye—a package which keeps the case dry and dust free—a package which can be depended upon to store the product in the manufacturer's warehouse, transport it from the manufacturer to the dealer by rail or truck, and to serve finally as an attractive wrapper to transport the product from the dealer's warehouse to the home of the ultimate consumer.

Within the past few years more and more furniture and department store dealers in metropolitan centers have come to demand a package durable enough to withstand the rigors of rail and truck travel, and yet simple and light enough to serve as a wrapper for delivery into the home.

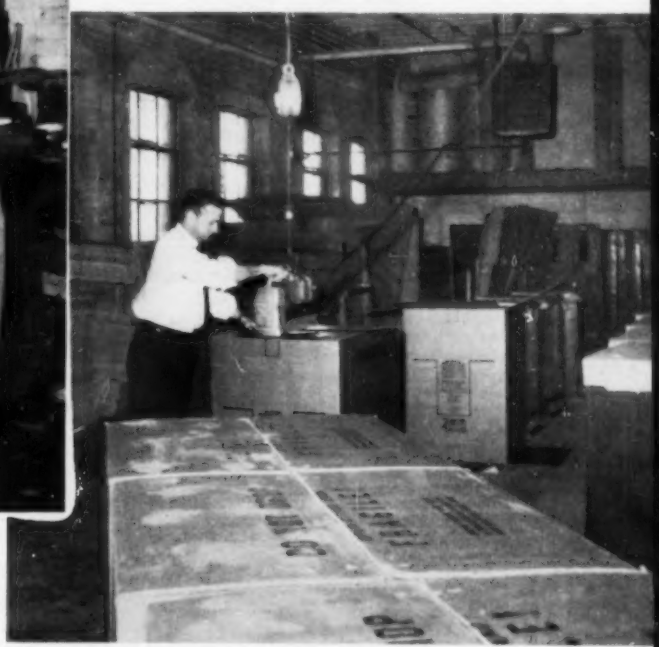
Quick disposal of packaging materials is a serious problem in cities, so the dealer is extremely interested in a package which may be easily removed and disposed of after delivery. For this reason and many others, all progressive furniture manufacturers now use package 2-F as described in the Railway Classification Committee specifications or pressure pack as it is better known.

Simply stated the pressure pack is a wrapper of corrugated fiberboard of at least 200 lb. test against breaking strength, over a protective pad of cellulose tissue or other padding material wrapped securely around the finished surfaces to prevent abrasion. A corrugated fiberboard box is very carefully sized so that it may be drawn down very snugly around the case with a tolerance approaching zero.

A wooden frame constructed of kiln dried, dressed and carefully sized lumber is used as a skid or a rest for the case and also provides a surface to which the bottom flap of the corrugated wrapper is nailed. The best packers insist upon using corner pads of corrugated board under the box and over the cellulose pad, although railway packaging regulations do not require such pads.

And, in contrast with old fashioned packs, the pressure pack carton is *not* fastened to the case. Prior to 2-F days, the framework of the package

Continued on Page 52



CASE GOODS PACKAGING has changed from (above) wrapping a sheet of kraft paper loosely about the case and then confining it inside a heavy cumbersome cage to (right) an attractive package which keeps the case dry and dust free, and is easy to transport

FIG. 1—STEAM-BENDING TABLE on which 2-in. red oak specimens were bent to a 16-in. radius of curvature. The socket wrench is used to control end pressure built up during the operation

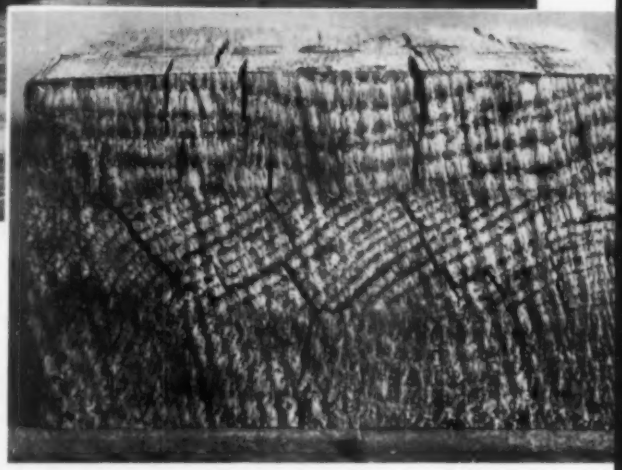


FIG. 2—TYPICAL DELAMINATION BLOCK, 2 x 3½-in. in cross section, cut from a preservative-treated, steam-bent specimen. Photo was taken at completion of the 12-day standard accelerated exposure test outlined in ASTM Designation D-1101-50T

Gluing Untreated Red Oak at Fiber Saturation Point

Teco reports favorably on fabricating products such as laminated railroad ties, utility poles at moisture contents they will be subjected to in service

By WILLIAM J. FINNORN
Chief, Glued Products Section,
Timber Engineering Co.

TABLE 1

Average block shear results for untreated red oak bonded at high moisture contents with a resorcinol-phenol adhesive[1]

Moisture content when laminated		Assembly time		Maximum shear stress[3]	Wood failure[3]
Average[2] Per cent	Surface Per cent	Open Minutes	Closed Minutes	P.S.I.	Per cent
29	22	0	0	2308	85
30	22	10	30	2801	84
30	22	0	60	2631	87
33	25	0	0	2357	87
33	25	10	30	2625	85
35	25	0	60	2386	83
			Average	2518	85

[1]The adhesive, Penacolite 1260, was double-spread at a rate of 65 to 70 lb. per 1000 sq. ft. of glue line area. Glue lines were cured at 150°F for six hours

[2]The average moisture content was calculated from the weight of the billets at the time of gluing and before testing and the moisture content of the tested blocks

[3]Each value is an average of 20 specimens

CAN WOOD BE laminated successfully at moisture contents near its fiber saturation point? This has long been a moot question, and one of practical as well as academic interest.

In recent years, a new field of wood bonding has developed. The introduction of modern waterproof resin adhesives has made possible the lamination of wood products for uses that subject them to severe weathering or exceptionally wet conditions. Today, the practice of laminating structural members for large wooden boats is commonplace. Laminated utility poles, which are subjected to severe exposure, are now being designed. Experimental laminated railroad ties have been produced and now are undergoing service tests in track **(3)***.

As there are adhesives which will withstand severe moisture conditions, now it would be advantageous to fabricate products, such as railroad ties, at the moisture content to which they will be subjected in service. This would eliminate glue line stresses caused by volumetric changes in the laminates, due to moisture pickup in service. Also, it would reduce production costs by minimizing drying time.

It should be made clear, at this point, that gluing wood at high moisture content must be avoided if the finished product is to be used under

*Numbers in parentheses refer to literature cited at the end of this article.

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dry conditions. In this instance, both the wood and the glue lines would be unduly stressed upon drying **(2)***.

Gluing wood at elevated moisture content also finds practical application in the lamination of steam-bending stock. It has been previously established that untreated white oak and preservative-treated red oak can be laminated at moisture contents as low as 12% and subsequently steam-bent with excellent results **(4)**. Theoretically, however, wood steamed at its fiber-saturation point is more plastic and therefore capable of being bent with less effort, and possibly with somewhat better results, than wood steamed at lower moisture contents. It would, therefore, be advantageous to laminate the straight bending stock at fiber saturation.

The feasibility of gluing red oak at high moisture content was investigated at the Timber Engineering Co. laboratory. The study was conducted in the following phases: (1) Determination of the glueability of untreated red oak at moisture contents approximating fiber saturation. (2) Investigation of the glueability of preservative-treated wood at moisture contents near fiber saturation. (3) Study of the effect of the adverse conditions of steam-bending on glue lines of laminated, untreated and preservative-treated red oak bonded at fiber saturation.

Highlights of the Study:

1. Untreated, Wolmanized (Tanalith-treated), and pentachlorophenol treated red oak were successfully bonded at moisture contents approximating fiber saturation, using a phenol-resorcinol adhesive.

2. Various assembly times were employed in the tests and were all found to be suitable for laminating untreated and Wolmanized red oak at fiber saturation. Penta-treated material bonded well when an open or closed assembly was employed, but unsatisfactory glue joints resulted when immediate assembly was used.

3. Laminated members of untreated and Wolmanized red oak, bonded at fiber saturation, were steam-bent to a critical radius of curvature with excellent results. Block shear and accelerated exposure tests conducted on the bent specimens indicated that no appreciable weakening of the glue joints occurred as a result of the steam-bending operation.

Gluability of Untreated Red Oak at Fiber Saturation

Twenty-four red oak blocks measuring 7/8 x 2½ x 12 in. were cut from

Continued on Page 48

**Teco does not advocate gluing at high moisture content except as otherwise stated in this article.*

TABLE 2

Average block shear results for preservative-treated and untreated red oak bonded at moisture contents near fiber saturation with a resorcinol-phenol adhesive[1]

Average moisture content when laminated	Preservative	Preservative retention	Assembly time		Maximum[2] shear stress	Wood failure[2]
			Open	Closed		
Per cent		Lb./cu. ft.	Minutes	Minutes	P.S.I.	Per cent
25	Tanalith	0.56	0	0	2541	95
25	Tanalith	.54	10	30	2536	96
25	Tanalith	.57	0	60	2326	93
26	Pentachlorophenol	9.0	0	0	2183	20
26	Pentachlorophenol	9.0	10	30	2387	83

[1]The adhesive, Penacolite 1260, was double-spread at a rate of 65 to 70 lb. per 1000 sq. ft. of glue line area. Glue lines were cured at 150°F for six hours

[2]Each value is an average of 20 specimens

TABLE 3

Grading system for visual evaluation of quality of laminated steam-bent members

Classification	Description
Excellent	No tension failures; compression failures absent or inconspicuous on the concave face of the bend; no appreciable crinkling or buckling across the thickness of the bends.
Good	No tension failures; compression failures extending not more than one-third through the depth of the member; no appreciable crinkling or buckling across the thickness of the bends.
Fair	No tension failures; compression failures extending not more than one-half through the depth of the member; compression failures moderate, not severe.
Poor	Tension failures; compression failures severe and extending through more than one-half of the depth of the member.

TABLE 4

Results of block shear and delamination tests for untreated red oak test frames laminated at fiber saturation and steam-bent to a 16-in. radius of curvature[1]

Specimen number	Moisture content when laminated		Maximum shear stress		Wood failure		Delamination
	Surface	Average	Glue line #1	Glue line #2	Glue line #1	Glue line #2	
	Per cent	Per cent	P.S.I.	P.S.I.	Per cent	Per cent	Per cent
FS-1	25	32	3163	2733	95	95	0.0
FS-2	24	28	3060	3453	90	90	0.0
FS-3	24	29	3160	3287	95	85	0.0
FS-4	25	33	2707	2933	100	90	0.0
FS-5	25	36	3137	2953	90	85	0.0
FS-6	25	35	3117	2917	100	90	0.0
FS-7	24	35	2973	2533	90	100	0.0
FS-8	23	32	2737	2680	100	100	0.0
FS-9	23	29	2667	2547	95	80	0.0
FS-10	23	31	2433	2570	85	95	0.0
Average all glue lines = 2888 p.s.i., 92% wood failure, 0% delamination							

[1]Block shear and delamination specimens were tested according to procedures outlined in ASTM Designations D905-49 and D1101-50T, respectively

TABLE 5

Results of block shear and delamination tests on Wolmanized red oak test frames laminated at fiber saturation and steam-bent to a 16-in. radius of curvature[1]

Specimen number	Preservative retention	Average moisture content when laminated	Maximum shear stress		Wood failure		Delamination
			Glue line #1	Glue line #2	Glue line #1	Glue line #2	
	Lb./cu. ft.	Per cent	P.S.I.	P.S.I.	Per cent	Per cent	Per cent
WFS-1	0.55	24	2653	3063	85	100	0.0
WFS-2	.50	25	2543	2463	100	100	3.0
WFS-3	.53	26	2337	2333	85	85	1.8
WFS-4	.50	26	2467	2457	70	100	1.8
WFS-5	.53	25	2373	2840	100	100	1.4
WFS-6	.59	26	2477	2173	95	100	5.1
WFS-7	.54	25	1800	1920	90	85	2.3
WFS-8	.58	25	2370	2453	95	95	0.5
WFS-9	.54	26	2110	2153	100	100	0.0
WFS-10	.53	25	2003	2280	75	90	5.1
Average all glue lines = 2363 p.s.i., 92% wood failure, 2.1% delamination							

[1]Block shear and delamination specimens were tested according to procedures outlined in ASTM Designations D905-49 and D1101-50T, respectively

C. E. BEACH DEMONSTRATES blocks from cutoff saws, strips from ripsaws and trimmings from other operations and the chips to which they must be reduced to make particle board

PARTICLE BOARD . . . How to Produce and Use It

This product—now out of development stage—should have greater effect on conservation of lumber than anything that has yet come from wood research

By C. E. BEACH
Production Manager, Broyhill Furniture Factories

FOR SEVERAL YEARS NOW furniture, plywood and building materials manufacturers as well as equipment engineers have been working on ways and means of making board from wood particles. There has probably been more time and effort spent on research and development of this program than any other development ever to come out of our industry.

In these days of continual rising costs, the most attractive view of their efforts is the long range economic and conservation possibilities it presents.

As far back as three and a half years ago, two of us from Broyhill Furniture Factories went to Europe to study these methods. Many others did likewise. During the intervening months, the development has progressed by leaps and bounds. Machinery manufacturers, glue producers and others have now come in to help with the development. The basic technical work has been done and the board has been proved by laboratory tests over a long period of time.

Meanwhile, millions of feet of particle board have been used in quality furniture produced by a number of our most progressive furniture manufacturers. This has been used over a period of many months and has proved to be most satisfactory.

In furniture manufacturing, particle board has been used almost exclusively as cores in plywood, and it compares very favorably to good lumber cores. In fact, in some instances the characteristics are superior.

Lumber, being stiff and stubborn, has always been difficult to hold from warping and cupping. Also sunken joints and sunken lumber strips in lumber core plywood have been prevalent complaints.

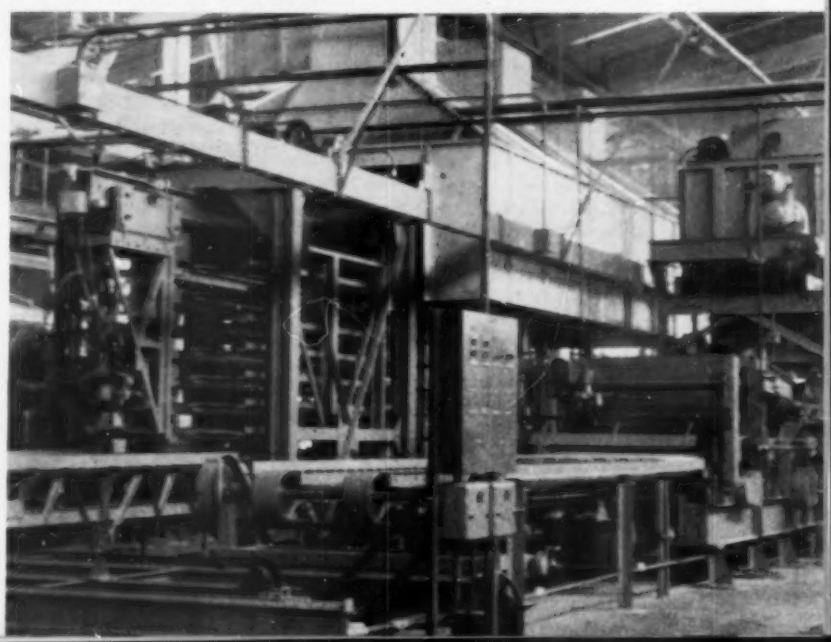
Since particle board has the wood broken into thousands of pieces, the ordinary stresses natural to wood are broken and overlapped with the intertwining and interleafing of the many wood chips. This makes particle board more stable and less apt to warp and cup. Also it is more pliant and less stubborn to hold than cores ordinarily used in furniture plywood.

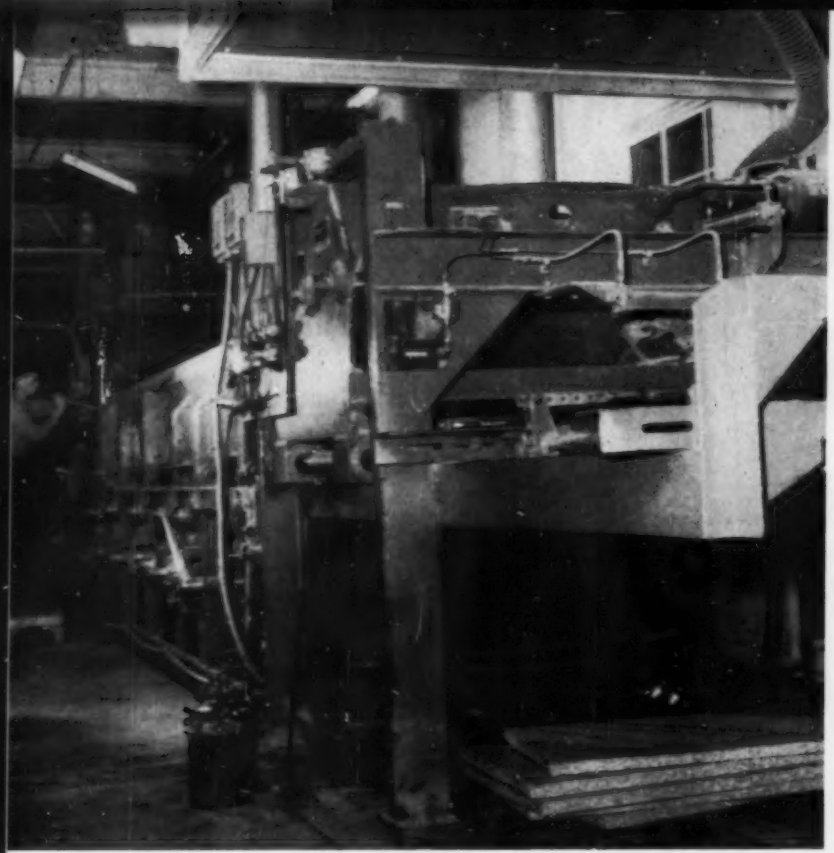
As to the complaint furniture manufacturers have on sunken joints, this too is eliminated because cores made from particle board often have no joints at all or at best only a joint at random to get desired dimensions or to utilize small trimmings.

Our experience has shown that with proper application of particle board it works well in furniture manufacturing. It glues well together—veneers hold to it very well—it can be satisfactorily banded with lumber—it edge veneers fully as well as lumber core—for all practical purposes nails and screws hold adequately. It can be tenoned and grooved and if desired, even molded.

The basic method of producing particle board has been used in making large boards from smaller pieces of wood for several decades. That is to

FOR MULTI-PLATEN PRESS, chips mixed with glue are spread on trays, moved to automatic press loader. When full load of trays is ready, all trays are pushed into press where proper pressure and heat are applied to make board





IN HORIZONTAL EXTRUSION METHOD glued chips fall from hopper down in front of horizontal ram which moves back and forth. Chips are pushed horizontally between heated platens and pressure applied

say, we have been making "big'uns from little uns," for a long time.

In our furniture factories after kiln drying, we bring the lumber to be used for cores into our machining processes as it comes from the saw mill, cut it into specified lengths, rip out the defects and then glue the narrow parts back together to produce a large board.

We do the same thing in producing particle board.

The wood, either lumber, lumber scraps or cord wood, is first cut into small particles, glued and then pressed back together to make a large board.

The two processes are identical except that the wood parts used in particle board are much smaller in their dimensions.

It has always been generally understood that the quality of a lumber panel or core depends on the quality and condition of the wood used in it. If the lumber is not of the proper species or if parts of the lumber used are not of the proper moisture content, then it is to be expected that the lumber board or the plywood made with such a lumber core, will give trouble in excessive warping, peeling of the veneers, sunken glue joints, shrinking or swelling of the several parts of the panel.

To a great degree this same thing is true in the making of wood particle board. The small particles within this board are wood and are subject to the same tendencies of wood. However, the stresses and strains inherent in wood are almost completely eliminated because the wood particles are so small and so intermeshed and interleaved in particle board. These pieces will swell if used too dry and will shrink if used too wet.

In producing particle board, as much care should be given to the correct moisture content of the wood particles as would be given to the lumber if boards were going to be made from lumber.

In mentioning the materials to be used in particle board, the ultimate board should have approximately 8% resin content to produce a board of suitable density for plywood cores in manufacturing furniture.

Wood particle board generally produced for furniture plywood cores runs in density 65 to 70%, specific gravity. (That is, 65 to 70% as heavy as water by volume.) This is only slightly heavier than yellow poplar or red gum. The species of wood being used affect the density. If the wood particles are largely oak or other heavy hardwoods, the density would be greater than if cedar, pine, fir or spruce are used. Also the density can be increased by the application of more pressure and a larger percentage of resin.

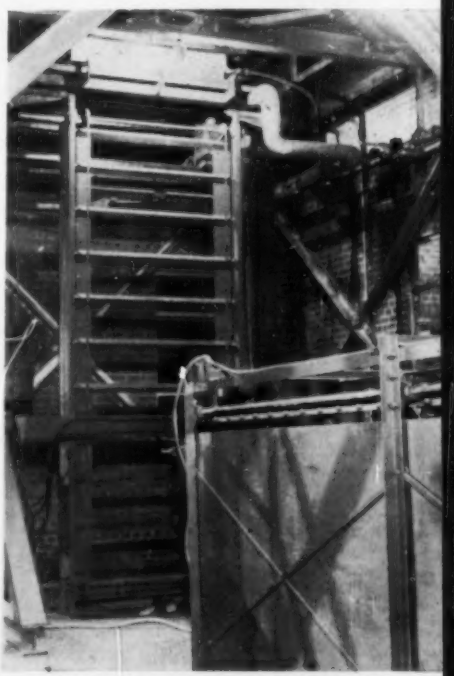
Another thing that has a bearing on the density is the size of the wood particles being used. Usually a high percentage of "fines" calls for a larger percentage of glue which makes a heavier, smoother board, but also increases the cost.

Generally, the breaking strength, rigidity, smoothness and cost of particle board rise almost in direct proportion to the increase in density.

All of the parts of a tree, except leaves, bark and decay, are suitable for grinding into particles for use in particle board. The pulpwood usually used in paper making, can easily be chipped and used in particle board. Scraps from sawmills and veneer plants make excellent particle board if bark is separated. And, of course, the trimmings and edgings of the dry lumber in our furniture factories are most suitable.

Quickly there comes the question as to how much of this type of wood is

Continued on Page 46



EXTRUSION END of vertical particle board installation showing automatic tilt-down conveyor in position to receive board as it is cut by motorized cutoff saw which travels across top on parallel steel tracks

6 ASSEMBLY machine operator takes stock from conveyor, feeds it at any rate from 30 to 60 f.p.m.—speed depends on operator's skill

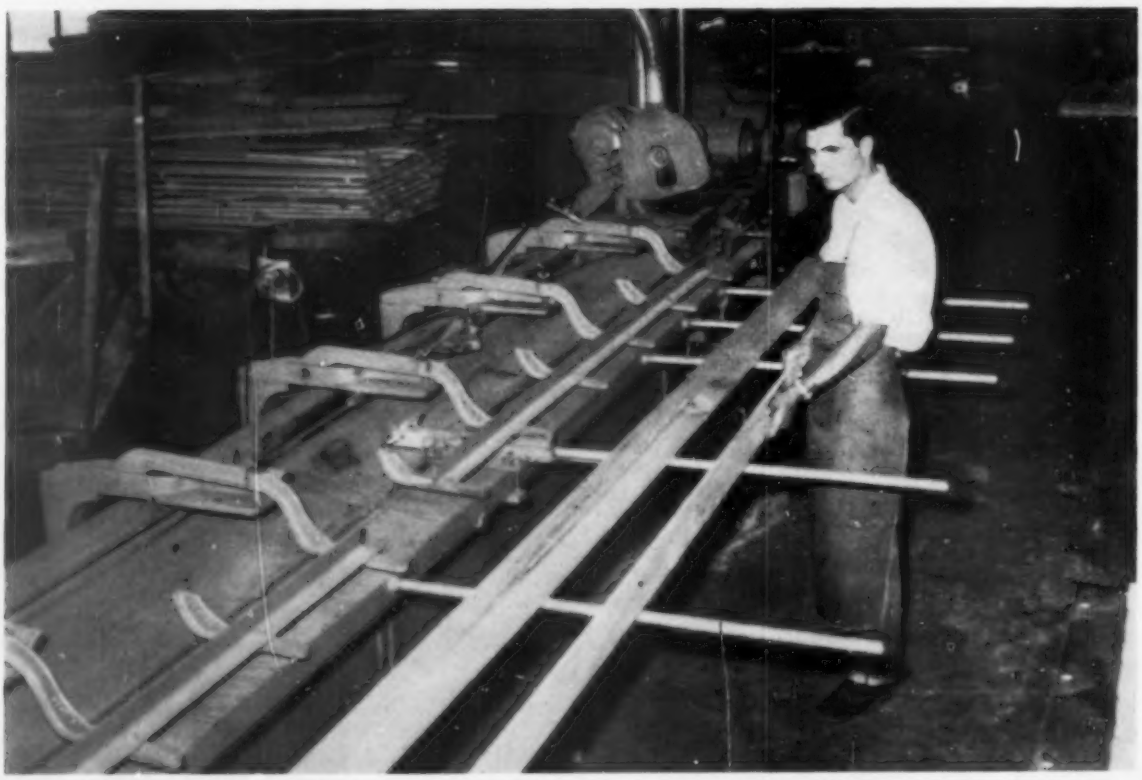
Finger Jointing

Continued from Page 17

This saw travels with the lumber as it emerges from the assembly machine. When the pre-determined point is reached, the saw automatically cuts it, then snaps back to follow the next piece out.

The assembled stock is now stacked and allowed to dry. While it is said that the stock can be machined immediately if proper adhesives are used, it is generally conceded that a waiting time of three to four hours is desirable.

After stacking, the stock may be moved to a moulder, to be moulded into parts used in a mobile home. Other pieces may be run through a moulder using side heads only, then laid up in panels and cured in an electronic press—for some of the uses described above.



7 PRE-SET SAW follows stock out of assembly machine to any length up to 16 ft. When proper length is reached, saw automatically cuts it, then snaps back to follow next piece out

8 Finger-jointed stock is laid up in panels and cured in electronic press to be used as core tops, shelf bottoms, drawer bottoms, sides and backs

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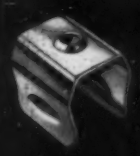

Attach padded, wood-framed seats to tubular metal frame . . . permit K-D shipment . . . provide quick, dependable fastening at home, store or warehouse. Sizes to fit range of tube diameters and basic frame designs.

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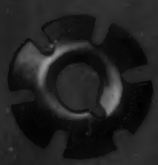

Provide positive anchorage for bolt or threaded rod in metal tubing . . . push in easily . . . can be removed only with substantial withdrawal force . . . useful in tubing assemblies to attach handles or other tubular components . . . available to fit wide range of thread and tubing sizes.

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Floats on rubber, slides on steel . . . base is completely insulated from chair or table by rubber cushion. Teeth hold glide in tubular metal legs. Swivel base allows glide to stand flat even though legs slope.

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Has curved prongs that provide twisting action for extra holding power as Teenut is driven into bored hole. Components can be repeatedly assembled and disassembled . . . provides steel threads in wood . . . permits K-D shipment.

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Can be held in place by brads until final attachment of components by dealer or purchaser. Short prongs prevent turning when hanger bolt is tightened.

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FOREIGN WOODS

By George N. Lamb

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Metopium brownei
Anacardiaceae (Cashew) Family

This family also contains such well-known trees or shrubs as cashew, mango, pistachio, sumac and poison ivy. The two most important timber species are goncalo alves and quebracho.

In British Honduras, CHECHEM (a Mexican name) grows to a height of 50 ft. with a diameter seldom over 15-18 in. It is often associated with sapodilla, the source of the chicle used in chewing gum. The thin reddish-brown bark contains a caustic juice but the wood is not poisonous.

The heartwood is a variegated brown and red with a greenish tinge and a golden luster. The sapwood is yellowish white, sharply demarcated. The wood is hard, strong and heavy. (Specific gravity, air dry, 0.85). The texture is rather fine and uniform; grain variable, not easy to work but will take a high polish. Sample shipment to U.S.A. in 1956. Although an attractive wood, it is of limited utility because of the small size of the trees. In British Honduras it is occasionally used for furniture.

Other names: Florida—coral sumac, poison wood; Jamaica—burn wood; Cuba—guao; Puerto Rico—poison tree; Haiti—bois mulatre; Mexico – cabal chechem.

Other woods called Chechem: Mexico – (chechen) Toxicodendron sp., British Honduras – chechem de caballo – Cameraria sp., Mexico – chechem blanco – Sabastiana sp.

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Dec. 10-13: National Retail Lumber Dealer's Assn., 3rd Building Products Exposition, International Amphitheater, Chicago.

Dec. 10-15: Kiln drying short course, University of California Forest Products Laboratory, Berkeley, Calif.

Jan. 7-11: Hardwood lumber grading course, Michigan State University, East Lansing, Mich.

Jan. 25: Wood-Turners Service Bureau annual meeting, Hotel Statler, Boston, Mass.

Jan. 27-29: 10th annual meeting, National Wooden Pallet Manufacturers Assn., Hollywood Beach Hotel, Hollywood, Fla.

Jan. 28-31: 8th Plant Maintenance & Engineering conference and show, Public Auditorium, Cleveland, Ohio.

Jan. 28-Feb. 2: Kiln drying short course, College of Forestry, Syracuse University, Syracuse, N. Y.

Jan. 31-Feb. 1: National Wooden Box Assn., 58th annual meeting, Boca Raton Hotel and Club, Boca Raton, Fla.

Feb. 4: Purdue Institute for Packaging Personnel, Purdue University, Lafayette, Ind.

Mar. 21-22: National Association of Store Fixture Manufacturers trade exposition, Conrad Hilton Hotel, Chicago.

WOODICTIONARY

LAP JOINT

A joint made by placing one adherent partly over another and bonding the overlapped portions.

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MFR.: Jones & Laughlin Steel Corp., Dept. WP, 3 Gateway Center, Pittsburgh 30, Pa.

DESCRIPTION: "Ardox" spiral nails for increased holding power, easier drive and less wood splitting, at less cost.

FEATURES: Treaded nails utilizing same principle as wood screws made from stiff stock wire which is prethreaded, then cut, pointed and headed. Thread form extends to base of head. Slightly rounded crest on thread allows pushing aside of wood fibers during drive instead of cutting the wood. Fibers then settle into grooves of spiral permitting from 50 to 200% more holding power. Reduced area and greater stiffness of nails result in easier drive. 38% more in quantity to pound than ordinary nails.

Automatic Arc Suppressor

MFR.: Radio Receptor Co., Inc., Dept. WP, Brooklyn, N. Y.

DESCRIPTION: Automatic electronic arc suppressor to eliminate arcing on generators used with wood bonding machines.

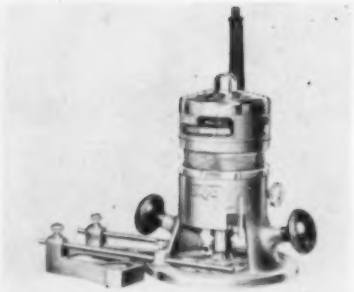
FEATURES: Detects when arcing is about to happen and instantly cuts off power, saving electrodes and materials from damage. Is small and compact.

Portable Router

MFR.: Skil Corp., Dept. WP, 5033 Elston Ave., Chicago 30, Ill.

DESCRIPTION: Model 299 portable electric router for grooving, dadoing, mortising and other wood cutting operations.

FEATURES: Powered by 1¼ h.p. motor. New type control switch which can be



operated without removing hands from guide handles. Precise cutting depth adjustment with positive locking control. Accessories are collets for ¼, 5/16, ⅜ and ½ in. bit shanks, router bits and template guides.

Splicer and Counter

MFR.: Econaway Mfg. Co., Dept. WP, 722 N. Main St., Bellevue, Mich.

DESCRIPTION: Electric abrasive belt

Season's Greetings

FROM

UNION LUMBER COMPANY

Inspired by the Spirit of Christmas, our wish for all our customers and other friends . . . for all the world . . . is Cooperation—the key to Good Will on Earth.

CHIEF OF THE REDWOODS NOYO UNION LUMBER COMPANY

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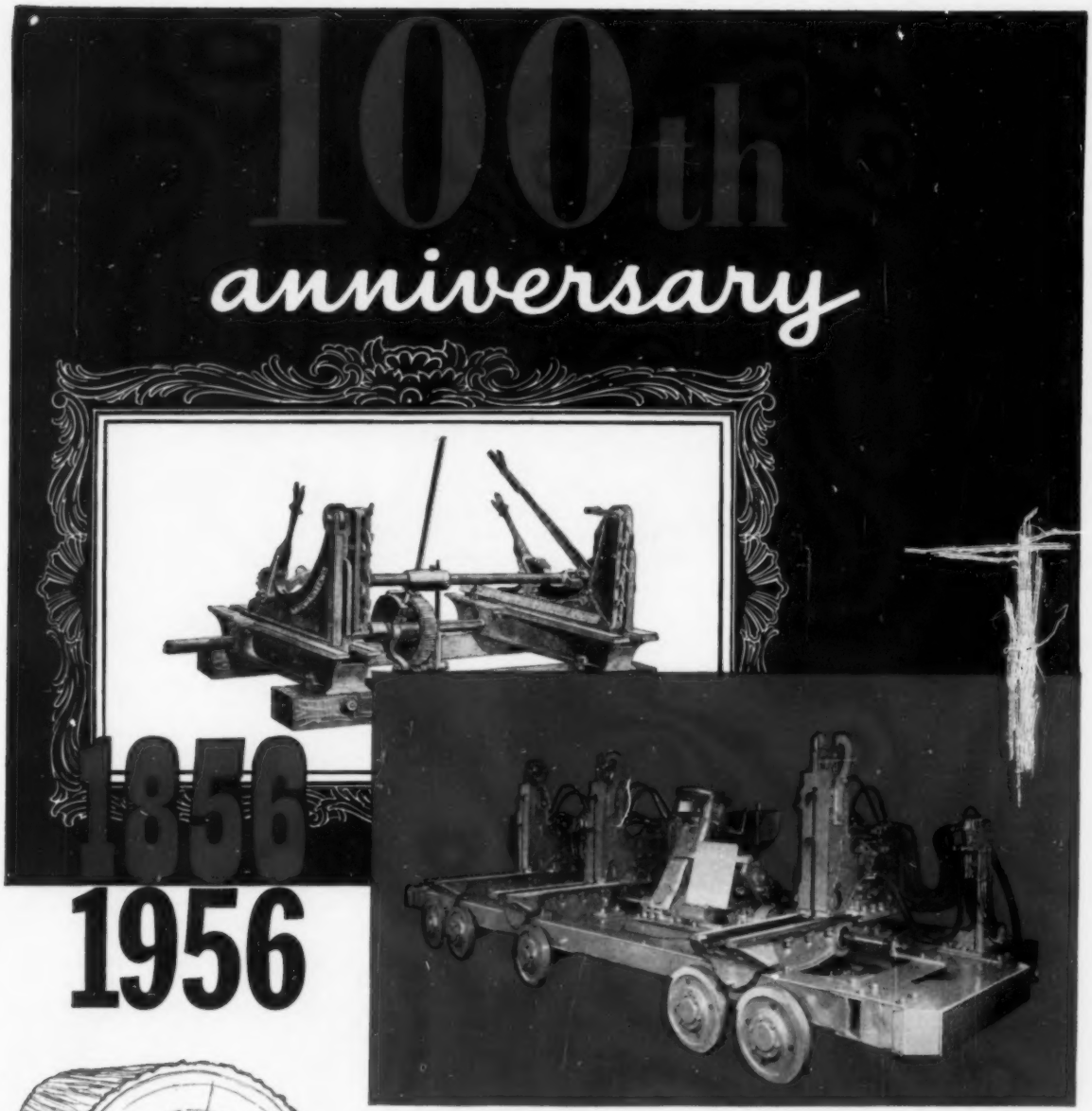

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splicing press and measuring counter.

FEATURES: 36 in. press for belts to 36 in. wide, and 50 in. for belts to 50 in. wide. Thermostatically controlled and sets splice in seconds under high pressure. Swings out of way while belt is measured, cut and lined up for splicing. Counter mounts directly on press assembly and swings out while belt is cut and splice is set.

Steel Strap Dispenser

MFR.: Signode Steel Strapping Co., Dept. WP, 2600 N. Western Ave., Chicago 47, Ill.

DESCRIPTION: Power strap dispenser for quick steel strap feeding.

FEATURES: Push button enables operator to control length of strap fed through cutter jaws at rate of 6 to 10 ft. per second. Pull of cutter handle severs strap. Cutting requires 2 to 4 seconds. Motor, brake assembly, speed reducer and bearings all oversize to meet any load demand. Twelve cutter blades can be resharpened many times.

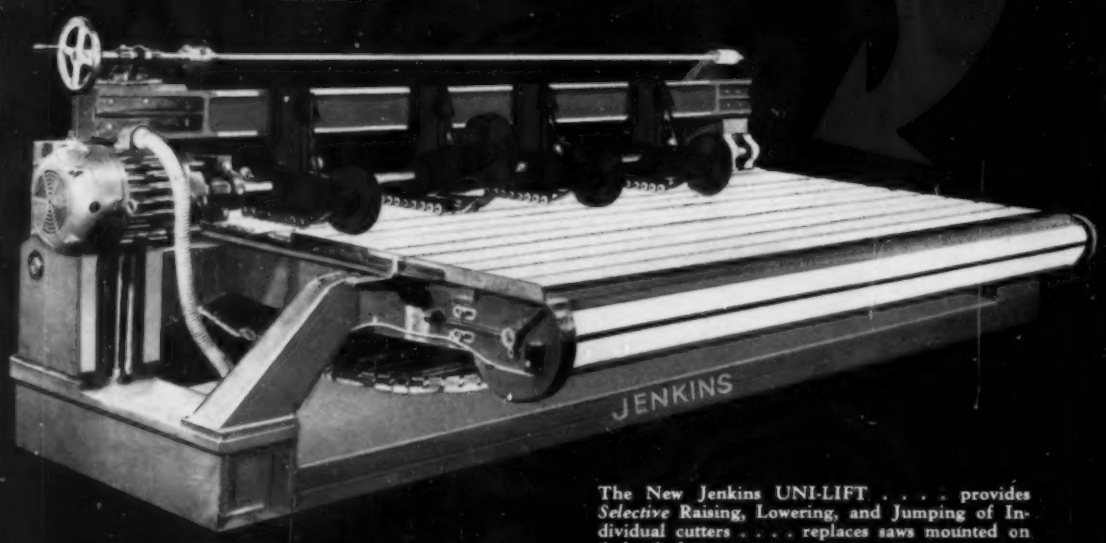
Wood Lathe

MFR.: Delta Power Tool Division, Rockwell Mfg. Co., Dept. WP, 457 N. Lexington Ave., Pittsburgh 8, Pa.

DESCRIPTION: Variable-speed 12 in. wood lathe for heavy-duty wood turning operations.

FEATURES: 38 in. capacity between centers, 12 in. swing over bed and 16½ in. swing over gap with stock up

NOW Raise . . . Lower . . . and Jump EACH SAW INDIVIDUALLY!



The New Jenkins UNI-LIFT . . . . provides *Selective* Raising, Lowering, and Jumping of Individual cutters . . . . replaces saws mounted on dado shaft.

NOW Without Changing Cutters . . .
Without Dado Shaft Problems . . .

DO A WIDER VARIETY OF MULTIPLE GROOVING . . . CUT OFF . . . and SLITTING operations

In a Single Pass!

Jenkins WOODWORKING MACHINERY DIVISION
Curt G. Joa INC.
SHEBOYGAN FALLS, WIS.

Look at these Advantages

- New Jenkins UNI-LIFT eliminates problems of shaft uncoupling, balancing, and cutter changing.
- Each cutter, mounted on separate adjustable arm, is easily and quickly adjusted to desired grooving and slitting depth, independently of other cutters.
- To change distance between cutters, simply raise, and reposition individual cutter horizontally with UNI-LIFT.
- Each cutter is individually removed for sharpening, or changed to meet job requirements, without disturbing adjacent cutter set-ups.
- Holddowns, on each side of cutter, move simultaneously with cutter in horizontal direction, remain in effective holddown position when cutter is raised.

Write for full information today!

ALL-BIRCH PLYWOOD

From the world-famous forest resources of Finland, imported all-birch plywood — sizes up to 4' x 6', all thicknesses . . . cut to size to buyer's specifications.

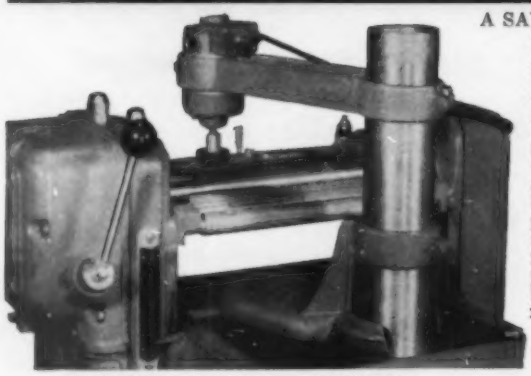
All-birch ¾" 13-ply or 15-ply laminates for cabinet doors, table tops, etc.; lumber core for table tops; door panels of birch plywood (1⅛" 3-ply).

Also standard hardboard, ⅛" and 3/16" thickness, with outstanding physical properties.

Dependable deliveries from Finland's largest and oldest plywood source. Quotations submitted — your inquiries invited.

FINWOOD
INDUSTRIES • Ramsey, N. J.

Foster Portable JOINTER PLANER BLADE SHARPENER



A SAVING of 2 to 3 hours is assured whenever you use the FOSTER PORTABLE JOINTER or PLANER-BLADE SHARPENER. No removing of blades or costly, time consuming readjustment. All blades are ground parallel to table top in a few minutes and machine is back in production with all blades cutting uniformly.

Foster Sharpeners are available from dealers listed below.

CALIFORNIA
Olympic Machinery Co., *Los Angeles*
DISTRICT OF CALIFORNIA
John O. Underwood, Inc., *Washington*
ILLINOIS
John J. Normoyle Co., *Moline*
KENTUCKY
McLaughlin Machinery Co., *Newport*
MASSACHUSETTS
Dowd Supply Co., *Orange*
MAINE
W. D. Matthews., *Auburn*
MINNESOTA
G. C. Peterson Machinery Co.
H. A. Vanderhoof Co., *Minneapolis*
MISSOURI
Paul Wolf Machinery Co., *Saint Louis*
NEW YORK
American Machinery & Motor Co.
Rudolph Boss, Inc., *New York*
Victor A. Peterzell Co., *Rochester*
NORTH CAROLINA
S. W. Harrington, Inc., *Asheville*
OHIO
Critchlow Woodworking Machinery Co., *Cleveland*
The Freeman Supply Co., *Toledo*
PENNSYLVANIA
Herman Spic., *Philadelphia*
Machinery Sales Co., *Pittsburgh*
Hermance Mach. Co., *Williamsport*
B. M. Root Co., *York*
WISCONSIN
Lakeshore Machinery Co., *Milwaukee*
CANADA
Preston Sales & Service, *Preston, Ontario*

FOSTER SUPPLIES COMPANY
6122 Milwaukee Avenue, Dept., WW, Chicago 30, Illinois

to 3½ in. thick. Speeds from 340 to 3200 r.p.m., and incorporates counter shaft that insures uniform power transmission at all speeds. Heavy-duty head stock spindle features double row, pre-loaded ball bearings at work end. Drive to spindle applied between inboard and outboard bearings to prevent spindle "whip." Has graduated speed indicator, quick-acting cam clamp and protruding safety stop.

Plastic Backed Strapping Tape

MFR.: Johns-Manville, Dutch Brand Division, Dept. WP, 7800 Woodlawn Ave., Chicago 19, Ill.

DESCRIPTION: No. 400 strapping tape with 250 lb. tensile strength for packaging, package reinforcing, palletizing and other uses requiring extra strength at low cost.

FEATURES: Combines polyvinyl plastic, glass strands and pressure sensitive adhesive. Resists abrasion, acids, rust, mildew, water, oil and grease and won't split or sliver. Holding power 68 to 72 p.s.i. Flexibility per-

Phone, wire or write
Northern Hardwood Veneers, Inc.
Butternut, Wisconsin

Never-say-die dependability . . .
proved on the Alcan Highway!

The Alcan test run was supervised and certified by the AAA.

NEW TASK·FORCE 57 CHEVROLET TRUCKS

Six new '57 Chevy trucks tamed the rugged Alcan in one round-the-clock sprint. They covered the grueling run (normally a 72-hour trip) in less than 45 hours to prove their durability!

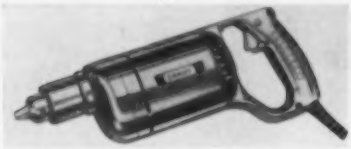
They took everything the truck-killing Alcan could dish out—and not a single unit dropped out or turned back due to mechanical failure! They turned in top scores for performance and economy, too! Look over the Alcan Highway Champs at your Chevrolet dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

NO JOB TOO TOUGH FOR THE ALCAN CHAMPS!

You get Alcan-proved dependability in whatever light- or medium-duty model you choose. Put a new Chevy to work for you and take advantage of its extra stamina, its time- and money-saving ways!

PROVED ON THE ALCAN HIGHWAY . . . CHAMPS OF EVERY WEIGHT CLASS! CHEVROLET

mits tape to conform to irregular surfaces. Will not cut into edges of packages. Easy to apply. Available in standard widths starting from ¼ in. in 60 yd. rolls.



Portable Electric Drill

MFR.: Stanley Electric Tools, Div. of Stanley Works, Dept. WP, New Britain, Conn.

DESCRIPTION: Series 300 of 8 portable electric drills.

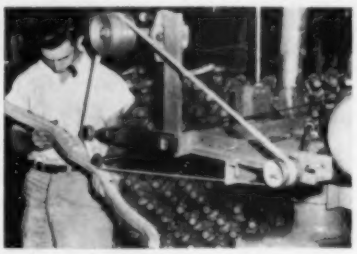
FEATURES: Designed for rugged work where one drill must satisfy many needs. Three chuck sizes, ¼, ⅜, and ½ in., are available. Drills have interchangeable handles, either pistol-grip or enclosed riveter type. A press-button safety lock is located on handle near trigger. Anti-friction bearings are used, and drills are housed in polished die-cast aluminum.

Shaftless Motor

MFR.: Imperial Electric Co., Dept. WP-M, 84 Ira Ave., Akron, Ohio.

DESCRIPTION: Shell-type shaftless motors from ¼ to 25 h.p. for precision grinding and woodworking operations.

FEATURES: Motors are compact. Can be mounted in cavity on machine. When used on machine spindle mounts directly, thus providing maximum power at point of use. Available with conventional or special operating characteristics, the latter of which includes single, multi-speed or high frequency operation on work requiring high torque, reversing or frequent stop-start service.

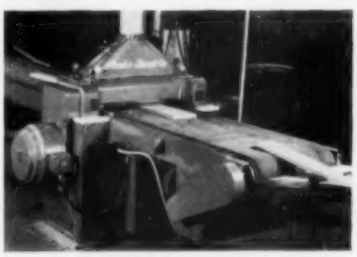


Spool Sander

MFR.: Albright Machine & Carving Works, Dept. WP, Route 1, Valdese, N. C.

DESCRIPTION: Master spool sander for wood carvings and intricate contour polishing.

FEATURES: Uses 47 to 96 in. coated abrasive belts in ⅛ to 2 in. widths, running over natural rubber spool which can be shaped to fit work. Spool serves as abrasive belt drive wheel. Belt tension provided by spring-backed backstand idler mounted on vertical arm. Small idler wheel above and forward contact wheel or spool controls tracking. Moves either laterally or back and forth, and locks into position when proper tracking obtained.

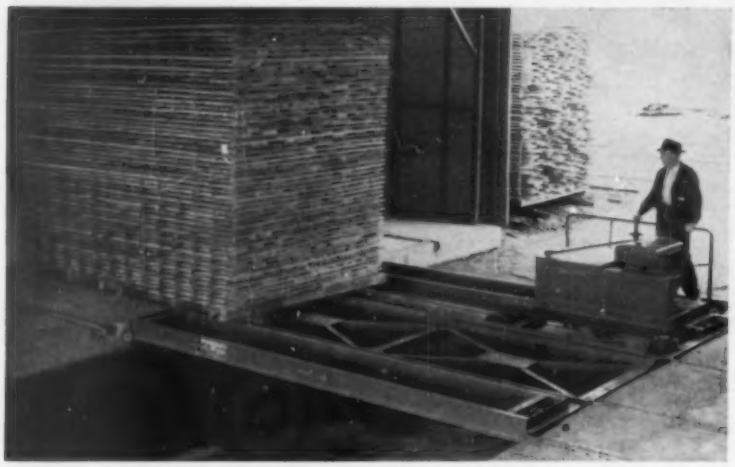


Wood Planer

MFR.: Porter-Stuart Co., Dept. WP, 730 Plymouth Rd., N. E., Grand Rapids 2, Mich.

DESCRIPTION: No. 26 "Floplane" conveyor-planer for smooth flow planing.

FEATURES: Conveyor ties in directly with preceding and subsequent operations without additional equipment. Smooth flowing power covers full stock area. Contains no pockets to hold knots or splinters, so even warped pieces flow without hesitation. Cutterhead speeds up to 5400 r.p.m. Controls readily accessible. Motors and controls can be mounted on either side. 110 volt outlet provided for knife grinder.



Beneke Corp., Columbus, Miss.—Moore Power Car shown pulling kiln load from storage tracks.

Move Kiln Loads FASTER— EASIER and CHEAPER with Moore Power Car

Put POWER to work—loading or unloading kilns—transferring kiln loads to and from storage.

Moore Power Transfer Cars for small or large mill—end or cross-piled loads—gasoline or electric driven — slow or high speed.

Write for information — do it today.

MOORE DRY KILN COMPANY

Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers

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"Greatest Time-Saver since the Power-Saw"

—woodworkers report, after testing Weldwood® Flexible Wood-Trim* for edge-banding plywood, lumber, Novoply®, particle boards, etc.

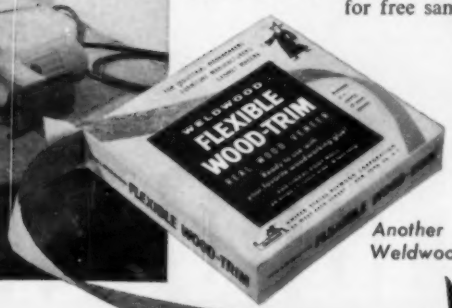
Save man hours and money! Use Wood-Trim for cabinets or case goods—for edging tops, sides and shelves in matching woods.

So flexible! Wood-Trim fits right around corners or formed curves, without chipping or peeling. Even wraps around a lead pencil!

No nails! No ironing! No sawing! No sanding needed before finishing. You stain or finish Wood-Trim same way as the face. You get perfect results every time.

You can use any woodworking glue. But no clamps, presses or heat are needed if you apply Wood-Trim with Weldwood Contact Cement or Weldwood Presto-Set® Glue.

Woodworkers tell us that for beautifying exposed edges, there's nothing as easy, convenient or time-saving as Weldwod Flexible Wood-Trim, real wood veneer in handy, flexible, easy-to-apply rolls. Available in oak, walnut, fir, birch, Korina®, mahogany; other woods available on special order. Mail coupon for free sample or order from any Weldwood distributor.

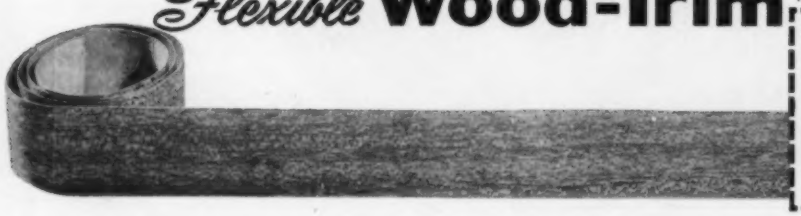


This handy dispenser-box speeds applications — "direct from box to product." Holds a continuous roll of 200 feet of Wood-Trim, in 8 ft. strips. Available in 1", 1½" and 2" standard widths. Wider widths available in quantities.

Another Weldwood Wizard

Weldwood *Flexible* Wood-Trim

*Trademark



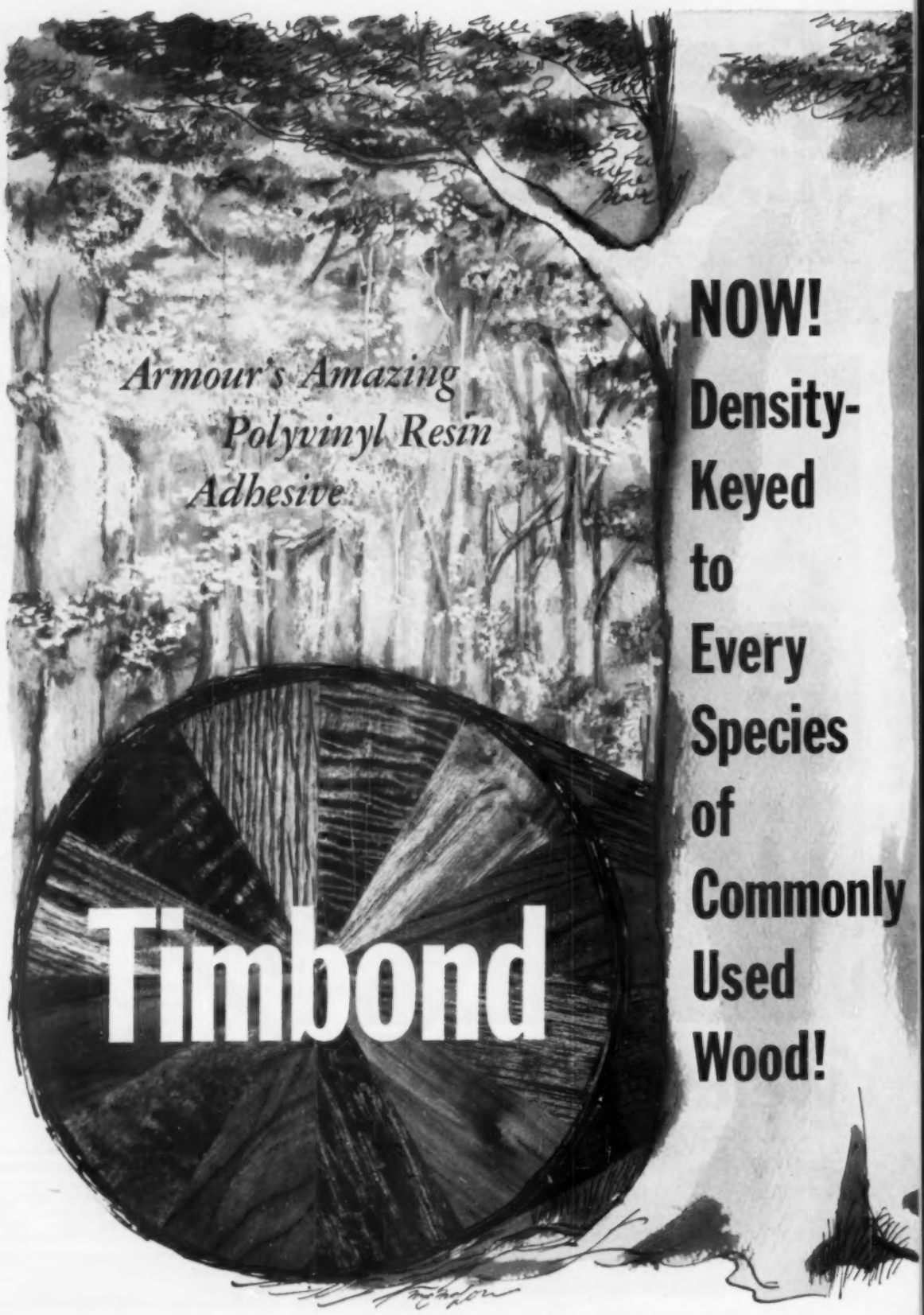
UNITED STATES PLYWOOD CORPORATION
Dept. WP12-6WT, 55 W. 44th St., New York 36.
Please send sample and full information on Weldwood Flexible Wood-Trim.

MY NAME_____

FIRM NAME_____

ADDRESS_____

CITY_____ STATE_____



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No longer do you have to guess which glue is right for the wood you use. Now TIMBOND's 4 different grades give you the right glue for *every* kind of wood you commonly use.

TIMBOND® saves you storage space and money—Eliminates the need to have on hand a wide variety of different type glues.

Sets fast... dries quickly—TIMBOND's super-fast development of joint strength is due to extremely rapid absorption of solvent into the wood.

Strong bond... stronger than wood itself—Laboratory shear tests prove that joints produced with TIMBOND are equal to or stronger than most woods.

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High freeze-thaw stability—All TIMBOND adhesives have 3 cycle freeze-thaw resistance. There's no quality degradation from freezing regardless of size of container.

ODORLESS • MOLD-PROOF • VERMIN-PROOF • LIGHT COLORED • WATER RESISTANT

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Makers of a complete line of adhesives for woodworking—
chrome glues, hide glues, liquid hide glues, polyvinyl resin emulsions

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P12

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235 South Hamilton Street • High Point, North Carolina

NEW CATALOGS and LITERATURE

Dehydrating Equipment. Davenport Machine & Foundry Co., Dept. WP, Davenport, Ia. Catalog "E" describes and illustrates complete line of dehydrating equipment including rotary dryers and coolers, continuous presses and screens.

Ripsaws. G. M. Diehl Machine Works, Inc., Dept. WP, Wabash, Ind. Bulletin MRS-909 describes and illustrates Model 909 multi-ripsaw for precision gang ripping of stock as short as 5 in. Also available is specification sheet on No. 750 "Wide-Arm" ripsaw with 48 in. usable throat clearance.

Electric Motors. General Electric Co., Dept. WP, Schenectady 5, N. Y. Bulletin GEA-6133A describes fractional horsepower gear motors including selection, data, dimensions, ratings and specifications.

Sandwich Core Material. Union Bag-Camp Paper Corp., Dept. WP, 233 Broadway, New York 7, N. Y. Bulletin describes honeycomb sandwich core material which is bonded to thin facing sheets to make panels for the following applications: pre-fabricated houses, partitions, doors, and desk, table and counter tops.

Shop Grade California REDWOOD

For precision millwork

Millwork manufacturers large and small find shop-grade California redwood an ideal material for both standard items and special jobs of all kinds.

MINIMUM AIR LEAKAGE will occur in window frames made of warp-resistant, shrink-resistant redwood.

MILLWORK & WOODWORKING DATA are described in detail in the CRA Retailer's Redwood File, available free in single copies.

Nature has endowed redwood with every natural property the wood worker could ask for—workability, durability, strength, light weight, glue-holding power, dimensional stability. And low-cost shop-grade redwood, skillfully cut, offers a remarkably high percentage of usable lumber.

Pictured are several samples of redwood millwork. For more specific information, write the California Redwood Association, 576 Sacramento Street, San Francisco 11, California.

Included in the Association are eleven of the nation's leading Redwood lumber mills: Willits Redwood Products Co., Arcata Redwood Co., Hammond Lumber Co., Hollow Tree Redwood Co., Holmes Eureka Lumber Co., Hulbert & Muffly Co., Inc., The Pacific Coast Co., The Pacific Lumber Co., Rockport Redwood Co., Simpson Redwood Co., Union Lumber Co.

SHORT LENGTHS OF REDWOOD can be pieced in a pattern to form handsome big surfaces, as in this garage door.

Complete Tool Line. Price & Rutzebeck, Dept. WP, 22150 Meekland Ave., Hayward, Calif. Catalog No. MC-902 illustrates each line of tools carried: carbide-tipped tools, chromium-processed "Tuff-Tooth" saw blades, and other types of both machine and portable tools.

Chemical Control. Thompson Chemicals Corp., Field Research Section, Dept. WP, 3028 Locust St., St. Louis 3, Mo. Station Paper No. 18 gives complete information on selective chemical control of hardwood species in pine stands.

Scraper Hoist. Ingersoll-Rand, Dept. WP, 11 Broadway, New York 4, N. Y. Folder gives specifications on "41" frame scraper hoist for heavy-duty materials handling.

Woodworkers' Vises. Columbian Vise & Mfg. Co., Dept. WP, 9021 Bessemer Ave., Cleveland 4, Ohio. Bulletin LL-3184 contains descriptions and illustrations of new line of woodworkers' vises and bench screws.

Chipboard Processes. Reference booklet, "Chipboard from Wood Wate," contains flow charts, operating photos, and technical details of various installations which process chipboard and particle board. Available from WOOD & WOOD PRODUCTS, 139 N. Clark St., Chicago 3, Ill., at $1.00 per copy or at quantity discounts.

Hardwood Parts. Holgate Brothers Co., Dept. WP, Kane, Pa. Four-page folder on hardwood parts problems includes specifications, finishes, wood variety and type of constructions. Illustrated.

Machinery and Labor. Dependable Machine Co., Dept. WP, Greensboro, N. C. Folder, "Why You Must Buy More Machines", outlines evolution from cheap labor and expensive machines to cheap machines and expensive labor, and describes necessity of getting most out of machinery.

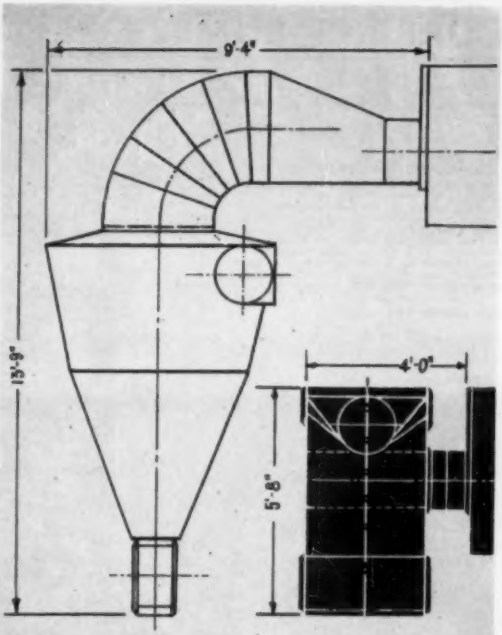
Molded Wood. Monsanto Chemical Co., Dept. WP, Springfield, Mass. Bulletin No. 1027, 12-page booklet, describes techniques through which to profitably utilize wood waste into useful molded products. Booklet entitled, "Multiply Profits" on same subject also available.

Pore Measurer. American Instrument Co., Inc., Dept. WP, Silver Spring, Md. Bulletin 2282 describes new Aminco-Winslow Porosimeter which performs complete pore-structure analysis of any porous material in 10 minutes.

Fir Plywood Catalog. Douglas Fir Plywood Assn., Dept. WP, Tacoma 2, Wash. Illustrated 1957 catalog covering fir plywood grades, specialty products and application data in condensed tabular form. Designed for quick reference.

New Solution for Pneumatic Conveying

At last, here is an ideal device for easier pneumatic conveying and dust collecting in the wood industry. Compare the size of the two units diagrammed at the right. Much smaller than a conventional cyclone of comparable capacity, the CARDWELL Tangential Separator is also more efficient in separating fine particles from the air stream. The CARDWELL Tangential Separator can be used in conveying systems, handling wood particles of any size and density. It can also be used as an efficient Pre-Separator in a Dust Collecting System.



CYCLONE VS. TANGENTIAL
Equal Air & Material Handling Capacities

Cardwell Pneumatic Tangential Separator

An economical investment, the CARDWELL unit is easy to install and because of its comparatively small size, can be located INSIDE most plants, with the air being returned to the room, thus eliminating expensive temperature losses. It has few moving parts and requires little maintenance. Available in a variety of standard sizes to handle from 1,000 to 20,000 CFM, and special units of larger capacity. The CARDWELL Pneumatic Tangential Separator is operating successfully in particleboard, furniture and other woodworking plants. We shall be happy to furnish full details and engineering data for the incorporation of the CARDWELL Pneumatic Tangential Separator into your Dust Collecting and Conveying Systems.

The CARDWELL MACHINE COMPANY

Franklin at 19th Street Richmond 11, Virginia
Phone 7-4593

Several Sales Territories
Available For Qualified Representatives

CURRENT LUMBER PRICES

These prices are a partial list taken from Hardwood Market Report, Box 5716, Memphis 4, Tenn. Copyright Nov. 19, 1956

Note: Each price change from preceding issue is marked by an asterisk (*).

SOUTHERN HARDWOODS

F.O.B. mills—Texas and Louisiana area. Estimate of present mill point average market price, to consuming trade on band-sawn Southern Hardwoods in carload quantities, random widths and lengths, rough, air dried and graded in accordance with NHLA rules on inspection. Prices in dollars per M ft. On straight cars of upper bracket grades premiums are frequently being paid.

ASH—FIRM TEXTURE

	FAS	#1C	#2C
4/4-in.	165	127	65
6/4-in.	182	138	68
8/4-in.	205	160	82

BASSWOOD

4/4-in.	165	130	84
6/4-in.	170	135	87
8/4-in.	180	145	90

BEECH

4/4-in.	132	107	56
6/4-in.	145	115	60
8/4-in.	167	127	72

CHERRY

4/4-in.	260	185	95
6/4-in.	280	205	109
8/4-in.	290	215	114

RED GUM—PLAIN

4/4-in.	205	135	75
6/4-in.	230	155	75

RED GUM—QUARTERED

4/4-in.	220	155	75
6/4-in.	250	180	90
8/4-in.	260	195	95

SAP GUM—PLAIN

4/4-in.	115*	95*	49
6/4-in.	135	115	53
8/4-in.	145	120	—

HACKBERRY

4/4-in.	125	105	66
6/4-in.	137	117	79
8/4-in.	150	125	80

SOFT MAPLE—WHAD

4/4-in.	145	125	70
6/4-in.	152	127	77
8/4-in.	160	130	80

SOFT MAPLE—WHND

4/4-in.	123*	98*	63*
6/4-in.	138*	115*	75*
8/4-in.	160	130	80

RED OAK—PLAIN

4/4-in.	187*	100*	70*
6/4-in.	200	138	83*
8/4-in.	210	145	—

WHITE OAK—PLAIN

4/4-in.	192	110	70*
6/4-in.	205	140	83
8/4-in.	220	155	—

PECAN

4/4-in.	120	100	48
6/4-in.	137	117*	55*
8/4-in.	155*	130*	65*

POPLAR—PLAIN

	FAS	S&S	#1C
4/4-in.	170	160	130
6/4-in.	185	175	140
8/4-in.	205	195	150

SYCAMORE—PLAIN

	FAS	#1C	#2C
4/4-in.	115	95	60
6/4-in.	127	107	62

TUPELO—PLAIN

TUF TEXTURE—DEEP SWAMP

4/4-in.	120*	100*	49
6/4-in.	135	115	53
8/4-in.	145	120	—

WILLOW

4/4-in.	130	100	64
6/4-in.	140	110	68
8/4-in.	150	115	70

APPALACHIAN HARDWOODS

F.O.B. mills—Johnson City, Tennessee area. Estimate of present mill point average market prices on sales to consuming trade on band-sawn Appalachian Hardwoods in carload quantities, random widths and lengths, rough, air dried and graded in accordance with NHLA rules on inspection. Prices in dollars per M ft. On straight cars upper bracket grades premiums are frequently paid.

TOUGH ASH

	FAS	FIF	#1C	#2C
4/4-in.	170	160	125	65
6/4-in.	190	180	130	75
8/4-in.	200	190	150	85

BASSWOOD

4/4-in.	185	175	130	85
6/4-in.	145	135	86	58
8/4-in.	170	160	100	60

BEECH

4/4-in.	145	135	110	60
6/4-in.	160	150	125	70
8/4-in.	180	170	140	80

BIRCH

4/4-in.	270	260	150	80
6/4-in.	280	270	160	85
8/4-in.	285	275	165	90

BUCKEYE

4/4-in.	135	125	105	58
6/4-in.	165	155	125	68
8/4-in.	170	160	130	75

CHERRY

4/4-in.	275	265	190	100
6/4-in.	300	290	215	115
8/4-in.	320	310	235	120

CHESTNUT

	FAS WHND	IB&C WHND	#1C WHND	SW
4/4-in.	200	175	160	95*
6/4-in.	210	185	170	105
8/4-in.	215	190	175	110

HICKORY

	FAS	FIF	#1C	#2C
4/4-in.	125	115	78	53
6/4-in.	145	135	86	58
8/4-in.	170	160	100*	60

HARD MAPLE

4/4-in.	225	215	150	75
6/4-in.	240	230	165	80
8/4-in.	250	240	175	85

SOFT MAPLE

4/4-in.	180	170	125	67
6/4-in.	190	180	145	70
8/4-in.	195	185	150	75

RED OAK—PLAIN

4/4-in.	195	185	120	84
6/4-in.	210	200	140	—
8/4-in.	230	220	150	—

WHITE OAK—PLAIN

4/4-in.	220	210	128	84
6/4-in.	240	230	150	—
8/4-in.	255	245	160	—

WHITE OAK—WHND

	FAS	FIF	C&B	#1C
4/4-in.	140	130	110	100
6/4-in.	165	155	135	125
8/4-in.	180	170	145	135

YELLOW POPLAR

	FAS	FIF	SAPS	#1C
4/4-in.	200	190	180	135
6/4-in.	220	210	200	147
8/4-in.	225	215	205	155

POPLAR SQUARES

	FAS	#1C & SD
4x4-in.	245	175
6x6-in.	280	190
8x8-in.	340	240

WALNUT—STEAM TREATED

	FAS 6" & up	FIF 6" & up	#1C	#2C
4/4-in.	440	400	210	70
6/4-in.	465	425	255	95*
8/4-in.	490	450	280	105

Walnut list reflects average fob mill, all areas. Basing point not generally observed.

NORTHERN HARDWOODS

Estimate of present f.o.b. Wausau, Wisconsin mill point average market prices to consuming trade on band-sawn Northern Hardwoods in carload quantities, random widths and lengths, rough, air dried and graded in accordance with NHLA rules on inspection. Prices in dollars per M ft. On straight cars of upper bracket grades premiums are frequently being paid.

BROWN ASH

	FAS	#1C	#2C
4/4-in.	190	140	76
6/4-in.	200	150	90
8/4-in.	205	155	95

BASSWOOD

4/4-in.	201	136	85
6/4-in.	211	146	95
8/4-in.	216	160	103

BEECH

4/4-in.	157	112	70
6/4-in.	170	125	78
8/4-in.	175	130	80

BIRCH

4/4-in.	325*	160	85*
6/4-in.	335*	180	103
8/4-in.	350*	195	112

ROCK ELM

4/4-in.	160	140	66
6/4-in.	170	150	76
8/4-in.	175	160	81

SOFT ELM

4/4-in.	165	130	66
6/4-in.	175	140	77
8/4-in.	180	145	87

HARD MAPLE

4/4-in.	235*	155	80
6/4-in.	245*	170*	90
8/4-in.	270*	180*	93

SOFT MAPLE

4/4-in.	170	135	75
6/4-in.	180	140	85
8/4-in.	195	150	93

RED OAK

4/4-in.	201	140	83
6/4-in.	211	155	90
8/4-in.	221	165	92*

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Quick Service
Fall and early Winter Construction and Repair Business requires Spot Shipments from Mills with ample diversified stocks.
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Pine Mouldings can be included in your mixed car
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Sumner Iron Works, Everett, Washington, W. Coast Rep.
Canadian Sumner Iron Works, Ltd., Vancouver, B.C., Canadian Rep.

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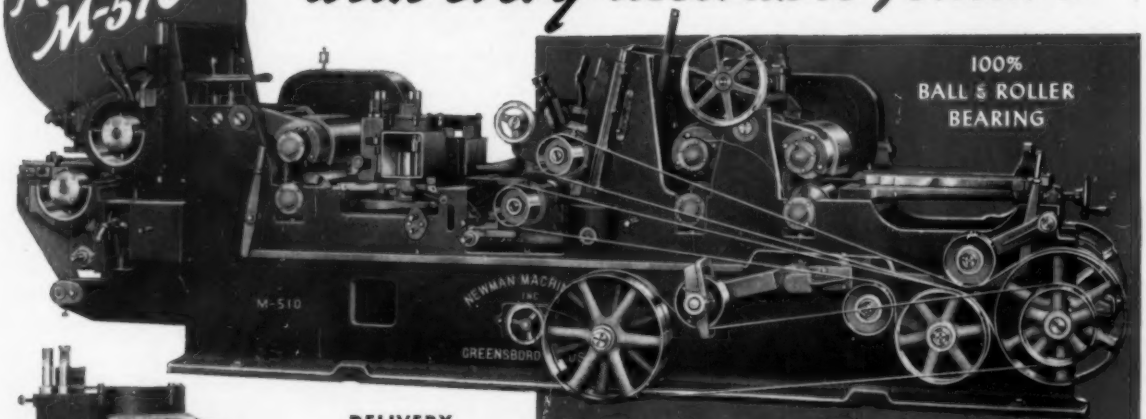

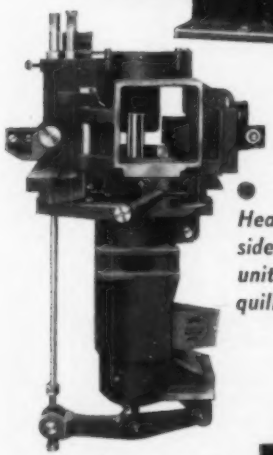

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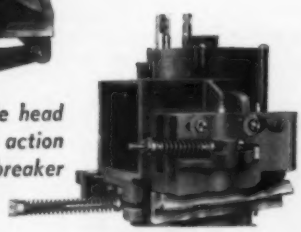
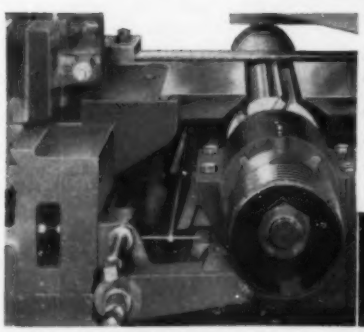
Heavy duty side head units of long quill design



Left side head double action chipbreaker



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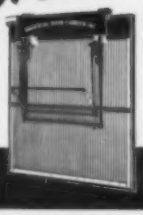

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EXECUTIVES OF WOOD ASSOCIATIONS who met recently to map out plans for joint activity are, seated, l. to r.: George Romeiser, American Walnut Manufacturers Assn.; Tom McGrath, Hardwood Plywood Institute; Charles Devlin, National Plywood Distributors Assn.; Burdette Green, Fine Hardwoods Assn.; Richard Behm, Hardwood Plywood Institute; Fred Montiegel, National Institute of Wood Kitchen Cabinets; James Nolan, National Woodwork Manufacturers Assn.; and John Huling, Fine Hardwoods Assn. Standing are: Chris Hoy, National Office Furniture Assn.; and Robert Spelman, Wood Office Furniture Institute

10 Associations Join to Promote Wood

Executives of 10 major trade associations in the wood industry met in Chicago Oct. 18 to study plans for "joint promotional activity" and to provide for a "mutually beneficial exchange of information" between their organizations.

Associations represented were: American Walnut Manufacturers Assn.; Hardwood Plywood Institute; National Institute of Wood Kitchen Cabinets; National Woodwork Manufacturers Assn., National Office Furniture Assn.; Wood Office Furniture Institute; Architectural Woodwork Institute; National Oak Flooring Manufacturers Assn.; National Plywood Distributors Assn.; Fine Hardwoods Assn.

A steering committee of six with Richard D. Behm, Hardwood Plywood Institute, as chairman has mapped out promotional plans for improving business stores and offices using "friendly wood." The basis for joint action on promotion is the growth of the "package concept" in store and office improvement.

"The businessman is interested in the complete store or office," Behm says. "This means not only new furniture or fixtures, but over-all design, color coordination, wall paneling or partitions, doors and windows, flooring and built-ins."

The group's first activity will be a "test" promotion in the Minneapolis-St. Paul area during February to be followed by a nation-wide effort a month later. The program will be launched with national advertising and publicity, but Behm points out the real success will depend on getting the various elements together in each community—the architects and designers, lumber dealers, millwork people, plywood distributors, office furniture dealers.

To do this the plan emphasizes local follow-through of the national promotion. There is a complete operating kit of 60 items for use on local level. Behm stresses that by working together, the local elements can offer customers unprecedented cooperative service which fits in with the emphasis on the "package concept" of store and office improvement.

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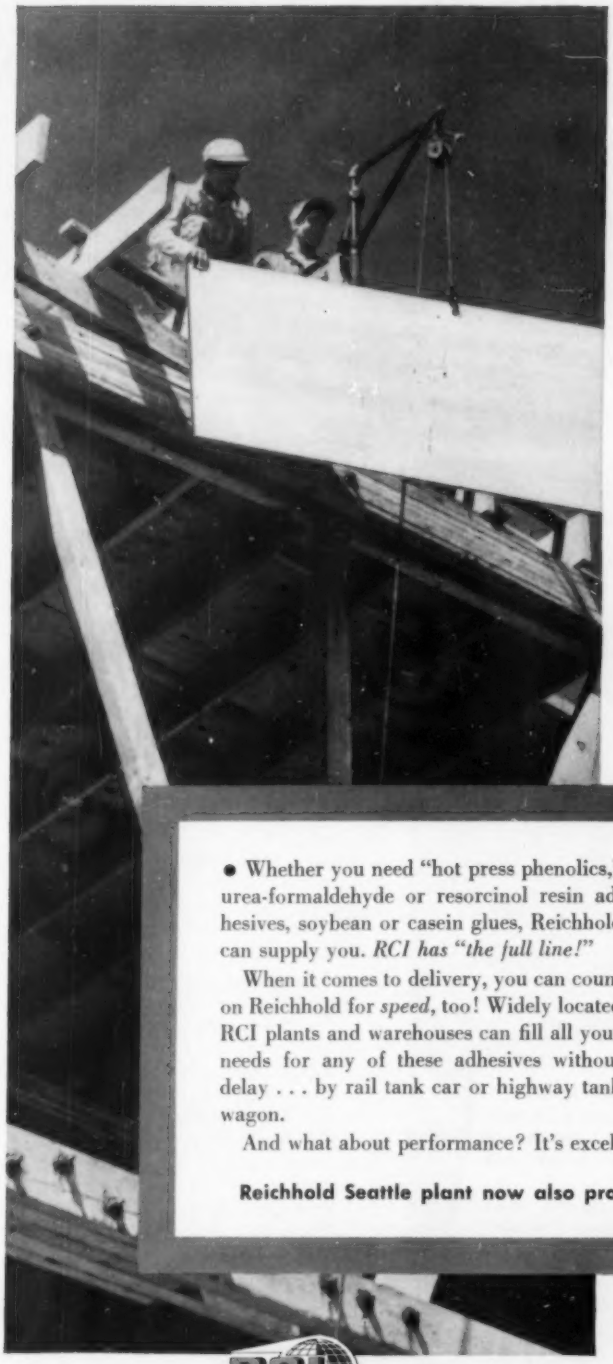

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Phenol • Formaldehyde • Glycerine • Phthalic Anhydride
Maleic Anhydride • Sodium Sulfite • Pentaerythritol • Pentachlorophenol

REICHHOLD CHEMICALS, INC., RCI BUILDING, WHITE PLAINS, N. Y.

Particle Board

Continued from Page 25

needed to make a given amount of particle board.

To answer this, we will base our estimate on dry wood weights; therefore, if green lumber is used, the weight of wet wood will be proportionately more. This should be taken into consideration if waste lumber or cord wood is used.

I understand a cord of yellow poplar with a moisture content of 6% weighs approximately 2550 lb. In chipping, grinding and screening, 20 to 25% of this will be lost in particles too fine to use in an economical particle board. Therefore, there would be left about 2000 lb. of chips that are suitable. This will produce about 1000 sq. ft. or a little less of 11/16 in. board of adequate density for cores in furniture plywood.

We estimate we need 2500 to 3000 lb. of un-hogged dry wood scrap for each 1000 sq. ft. of 11/16 in. particle board having .65 specific gravity.

We are using blocks from cut-off saws, strips from the ripsaws and trimmings from our other operations for producing the chips to make particle board.

From our experience, we estimate we are getting from 1000 to 1200 lb. of this type of wood material in cutting each 1000 bd. ft. of lumber as it comes from the kiln. To illustrate, while cutting 100,000 bd. ft. of lumber in any given period, we develop from 100,000 to 120,000 lb. of cut-off saw blocks, ripsaw strips and other trimmings suitable to be ground into particle board chips.

Through the years, we have tried to devise ways of using small blocks and strips to build up cores for plywood, but at best only a small percentage of the lumber waste has been suitable. Also, the labor cost has often offset much of the savings.

Many furniture plants have tried to hold down the waste percentage by purchasing the very best grades of lumber available. This has caused low grade lumber to go begging. In fact, most of the time lumber producers have a problem to sell the lower grades; therefore, large inventories of this low grade lumber accumulate and are often sold way below sawing costs.

This low grade lumber is a high percentage of the lumber produced today.

Furniture manufacturers who could operate using only low grade or a large percentage of low grade lumber no doubt could purchase this type of lumber below its value. This would be a boon to the lumber producer who now has a problem to market this low grade of lumber.

If more of the low grade lumber comes into demand and a larger percentage of the lumber produced can be depended upon to carry the production cost and reasonable profit needed, all lumber users can be benefited.

We could carry this same idea back beyond the lumber producer to the log producer. Perhaps instead of the farmer being able to sell half the trees in a tract, he could sell all that were of size. Therefore, the farmers would have a better chance to come out on timber lands. This in itself would be an inducement to leave more acres in timber and to do more planting in order to produce more timber.

I have the opinion and I believe it is shared by many others who have studied this problem—*the development and widespread use of wood particle board is going to have a greater effect on the conservation of the hardwood timber and lumber suitable for furniture than anything that was ever developed in this industry.*

Editor's Note.—*The foregoing paper was presented by Mr. Beach at the recent meeting of the Production and Cost Division, Southern Furniture Manufacturers' Association, at Blowing Rock, N. C.*

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FOUR-SIDE PLANER-MATCHER MOULDER
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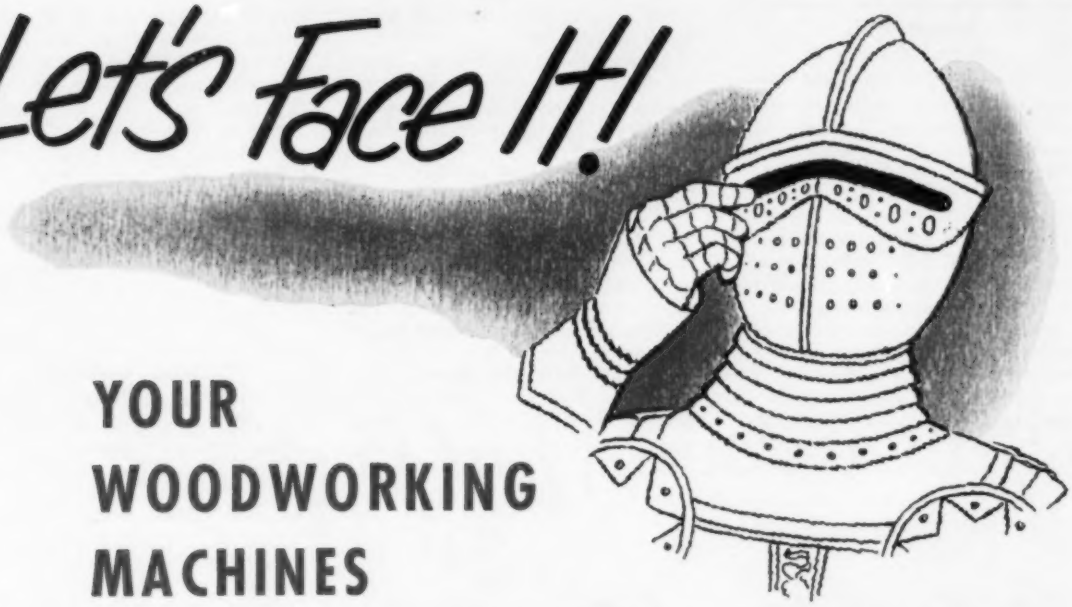

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Rough Mills

Continued from Page 20

veyor which carries them to another conveyor which feeds a jointer. The boards drop onto this conveyor edge down and pass over the jointer.

After one edge of the board has been jointed, the boards are conveyed up an incline to a jointer return where they are flipped onto another conveyor which carries them to a second jointer which joints the opposite edge.

When both edges have been jointed, the boards are deposited in a trough beside a man who sorts them according to length, then places each length board in a separate slot in the conveyor hopper. Each slot feeds a different ripsaw.

As each board reaches the ripsaw for which it is intended, it leaves the conveyor and slides down a chute to the ripsaw. The ripsaw operator needs only to move his hand a few inches to pick up the board and feed it into his ripsaw.

After the boards are ripped, dimension stock resulting is placed on flats for delivery to the glue room or cabinet planer. All edgings from the ripsaws are thrown into a common conveyor which delivers them to the salvage saw.

Edgings leave the common conveyor and drop onto a turntable, approximately 10 ft. in diameter, which rotates slowly to bring the edgings within reach of the salvage saw operator who recovers all usable lumber.

Waste remaining after the salvage is carried away by a series of conveyors to a wood hog where it is ground and used as fuel in the boiler room.

Some Machinery and Equipment Used by E. L. Bruce Co. at Little Rock and Memphis Plants:

Conveyors.....Walters Mfg. Co.
Surfacer.....Oliver Machinery Co.
Ripsaws.....G. M. Diehl Machine Works, Inc.

Gluing Red Oak

Continued from Page 23

a single "green" red oak board. The red oak used throughout this program was cut from three logs selected for bending quality at the sawmill. To prevent the green lumber from drying to a moisture content below that at which it was to be glued, it was stored in a tank of water prior to use.

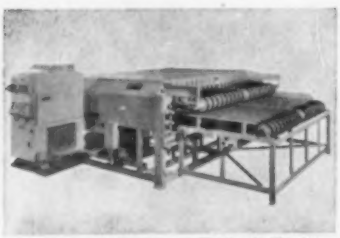
These specimens were air-dried to a moisture content of approximately 22%, measured at a point 1/16 in. beneath the wood surface with a portable electric moisture meter. They were planed, removing 1/16 in. from each face, thereby exposing a surface with a moisture content of approximately 22%. Thirty minutes after the specimens were planed, they were laminated into 12 standard ASTM glue billets.

A phenol-resorcinol adhesive was used, double-spread at a rate of 60 to 70 lb. per 1000 sq. ft. of glue line area. Four billets were prepared with a 40-minute assembly period, 10 minutes open and 30 minutes closed. Four billets were laminated, allowing a 60-minute closed assembly period and four specimens were assembled and clamped immediately after the spreading operation. A clamping pressure of 200 p.s.i. was applied to the billets and glue lines were cured at 150°F for six hours.

Twelve additional billets were prepared similarly, with the exception that they were laminated at a surface moisture content of 25%.

After being bonded, the specimens were conditioned to approximately 10% moisture content at a relative humidity of 50 ± 2%, and a temperature of 73.5 ± 2°F. Each billet was then cut into five standard shear blocks and tested according to ASTM Designation D-905-49 (1).

The results presented in Table 1 indicate that untreated red oak can be glued successfully at surface moisture contents of 22 and 25%. It should be noted that billets with surfaces at 25% had over-all moisture contents of 33 to 35%. The 120 block shear specimens



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exhibited a very adequate degree of wood failure (85%) and an average strength 39% greater than the 1800 p.s.i. which is generally accepted as the minimum average shear strength for laminated oak timbers.

After establishing that untreated red oak could be laminated at a surface moisture content of 25%, the next step was to determine whether satisfactory glue bonds could be obtained when Wolmanized or penta-treated red oak was laminated at moisture contents near fiber saturation.

Two green red oak boards were air-dried to 15% moisture content. The lumber was planed and cut into 48 glue billets. These specimens were weighed to the nearest 0.1 gram and their over-all moisture contents were determined with a moisture meter. They were then treated with Tanalith (Wolman salts) by a full cell process to a dry salt retention of approximately 0.55 lb. per cu. ft. Following impregnation, the billets were re-weighed, and those with satisfactory retentions were air-dried to 25% moisture content.

The salt retention and high moisture content made the use of an electric moisture meter impractical. Therefore, the billets were weighed periodically until they reached the weight corresponding to 25% moisture content as determined by the following formula:

$$W_{25} = \frac{(125)W}{(M + 100)} + RC$$

where:

W_{25} = Weight of the Wolmanized wood at 25% moisture content (grams)
W = Weight of wood prior to treatment (grams)
M = Moisture content of wood prior to treatment (%)
R = Preservative retention (grams)
C = Preservative solution concentration (%)

Twenty-four Wolmanized specimens, upon reaching 25% moisture content, were surfaced, removing 1/32 in. from each face, and were laminated into 12 standard glue billets. The adhesive, rate of spread, assembly time, and curing temperature, for these billets were the same as those previously described for laminating untreated billets.

Forty red oak billets measuring 7/8 x 2½ x 12 in. were cut from green lumber and air-dried to an average moisture content of 26%. They were weighed to the nearest 0.1 gram and treated by the Lowry process to an 8 to 10 lb. per cu. ft. retention of a 5% solution of pentachlorophenol in a No. 1 fuel oil*. The boards were weighed after treatment and those having retained too little or too much preservative were discarded. The following day, 16 specimens were planed, removing 1/32 in. from each face. Ten minutes after being surfaced, the boards were laminated into eight standard billets with the adhesive double-spread at a rate of 65 to 70 lb. per 1000 sq. ft. of glue line area.

Wolmanized and penta-treated specimens were conditioned to a moisture content of approximately 10% after the bonding operatoin. Five standard shear specimens were then cut from each billet and tested according to ASTM Designation D-905-49 (1).

The Wolmanized block shears exhibited high strength and wood failure (see Table 2) averaging 2468 p.s.i. maximum shear stress and 95% wood failure.

Pentachlorophenol-treated red oak laminated at 26% moisture content, using a 10-minute open–30-minute closed assembly time, displayed satisfactory shear strength and wood failure. Penta-treated billets bonded at this moisture content using immediate assembly also had adequate shear strength but their average wood failure was very low (20%).

These results indicate that red oak treated with pentachlorophenol can

*This oil met American Wood Preservers Association Specification P9, light oil.

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Rips to 48" wide

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be laminated at moisture contents near fiber saturation, but that assembly periods are more critical when laminating penta-treated red oak than when gluing untreated or Wolmanized material.

The feasibility of obtaining excellent glue bonds with Wolmanized and untreated red oak at fiber saturation was established during the first two phases of this project. The effect of the severe stresses of steam-bending on such bonds was then studied.

Two series of laminated specimens measuring 2 x 3½ x 42 in. were steam-bent to a 16 in. radius of curvature*. One series consisted of ten three-laminate, untreated red oak beams bonded at a surface moisture content of approximately 25%. The second series was made up of ten red oak planks laminated at 25% moisture content after having been treated with "Wolman Salts" to a retention of 0.55 lb. of dry salt per cu. ft.

The adhesive and the gluing techniques which had proved satisfactory for bonding untreated and Tanalith-treated wood at fiber saturation under parts 1 and 2 were adopted for this phase of its investigation. An assembly time equivalent to 10 minutes open and 30 minutes closed at 75°F was used.

The beams then were subjected to a steaming period of two hours at 212°F, after which they were bent to a 16 in. radius of curvature, using the jig shown in Fig. 1.

After being bent, the specimens were removed from the table in secondary restraining straps. They were allowed to cool and set for 24 hours. The secondary straps were then removed and the bends were graded according to the system presented in Table 3.

Each specimen was rated "excellent". Visual examination indicated that the glue lines of each test frame were unaffected by the steam-bending operation. To confirm this, staircase shear specimens were cut from each bent member and tested according to ASTM Designation D905-49 **(1).** Glue line water resistance was determined by subjecting a portion of each bent member to the accelerated exposure test outlined in ASTM Designation D-1101-50T **(2).** Results of these tests, which are presented in Tables 4 and 5, indicate that the glue lines possessed excellent strength and waterproofness even after being subjected to the process of steam bending (Fig. 2).

*A 16-in. radius of curvature is the standard test curvature for 2-in. thick white oak bending stock.

Conclusions:

1. Untreated red oak can be bonded successfully at surface moisture contents up to 25% using a resorcinol-phenol adhesive cured at elevated temperatures.

2. Wolmanized red oak can be bonded at an average moisture content of 25% with excellent results, using a resorcinol-phenol bonding agent cured at elevated temperatures.

3. Immediate assembly cannot be employed in bonding penta-treated red oak at moisture contents approximating fiber saturation.

4. With proper open and closed assembly periods, red oak treated with pentacholorphenol in a No. 1 fuel oil can be bonded successfuly at 25% moisture content.

5. Untreated red oak or red oak treated with Wolman salts can be laminated and steam-bent successfully at fiber saturation.

6. Steam-bending does not adversely affect glue bonds in laminated Wolmanized or untreated red oak members bonded at fiber saturation.

Literature Cited

1. ANXON: Standard Method of Test for Strength Properties of Adhesives in Shear by Compression Loading. Book of Standards, Part 7, D905-49. American Society for Testing Materials, Philadelphia, Pa. 1952.

2. ——————: Tentative Method of Tests for Integrity of Glue Joints in Laminated Wood Products for Exterior Service. Book of Standards, Part 4, D1101-50T. American Society for Testing Materials, Philadelphia, Pa. 1952.

3. ——————: Laminated Cross Ties. Improving the Service Life of Cross Ties, Sixth Progress Report, pp. 51-53. National Lumber Manufacturers Association, Washington, D. C. 1953.

4. McKEAN, H. B., BLUMENSTEIN, R. R., AND FINNORN, W. J.: Laminating and Steam-Bending of Treated and Untreated Red Oak for Ship Timbers. Southern Lumberman 185 (2321): 217-22. 1952.

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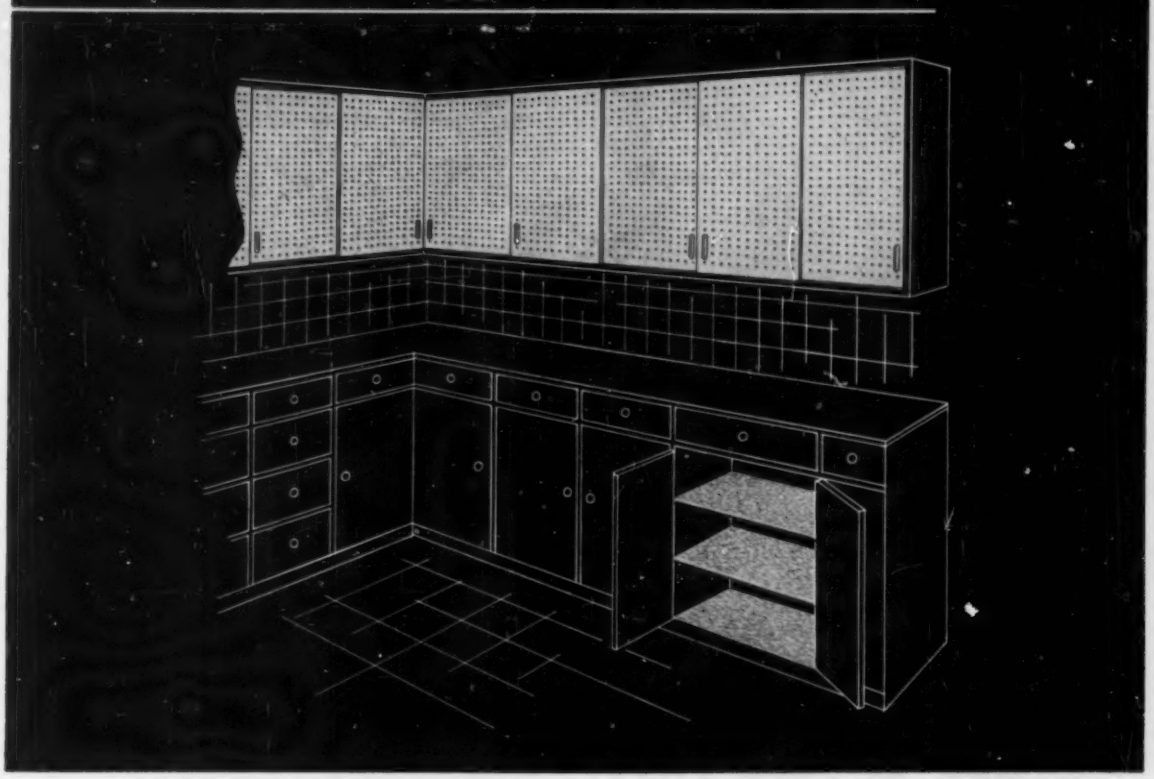

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Special head and tail sections are used at this plant to facilitate loading and unloading, some self-supporting and adjustable. The head section is commonly used as a receiving platform and the tail section serves as a self-feeder of loads on and off the conveyor belt.

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A LARGE FURNITURE PLANT which has conveyorized its finishing and packing operations uses automatic photo-electric timing controls for all converging conveyors, to prevent collision and jamming wherever two conveyors merge. Control relays of the main conveyor photoelectric controls are connected in parallel to the motor starter of the tributary conveyor. When both are open the tributary conveyor stops. Each finished or packed furniture piece on the main conveyor opens a control relay, which

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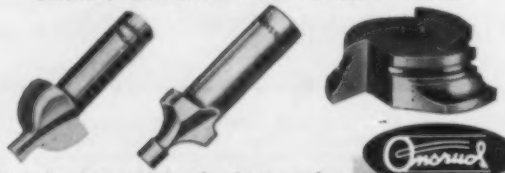

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Attn: Mr. Lloyd Quick

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This machine to date has given us complete satisfaction. Through this Panel-Flo we process all core stock varying from 1/4 to 2-1/4 inches in thickness and from 12 to 60 inches in length. Both soft and hard woods are used.

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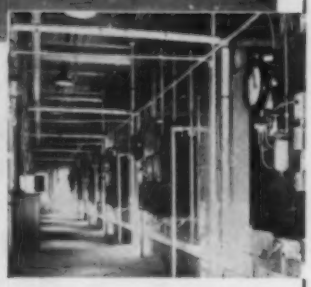
Interior of one of the six Standard Prefabricated Dry Kilns installed at Draper's Swannanoa, N. C. plant, showing palletized loads of hard-to-dry dogwood squares. Each kiln does an excellent job of drying approximately 30,000 squares per load.



This is the operating room for all six Standard kilns at Swannanoa. Other Standard installations for Draper are located at Hopedale, Mass.; Beebe River, N. H.; and Tupper Lake, N. Y.

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Yes, the Draper Corporation certainly *does* choose Standard . . . again and again . . . for *all* its dry kiln requirements. Manufacturers of bobbins and shuttles, Draper has its main plant at Hopedale, Massachusetts, where a Standard prefabricated research kiln was installed several years ago to establish whether it could dry dogwood satisfactorily. As a result of this exhausting research, Draper erected a new plant at Swannanoa, N. C. and installed six Standard Prefabricated Dry Kilns!

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is held open through adjustable time delay, until it passes through the merging area. Each piece on the tributary conveyor opens a similar control relay which stays open until it passes through the light beam. When the main conveyor relay is open and the tributary relay also opens, the tributary conveyor is stopped to hold the piece in the photoelectric timing control light beam until the main conveyor relay closes.

Gunbarreling Large Logs

WHEN IT IS REQUIRED to cut large logs at circle mills operating with small saws, gunbarreling is a common practice. The gunbarreling cutting method has the log turned less than a quarter turn, usually ⅛ or 1/16th turn, for each cut until the log is brought down to a size within the capacity of the saw for conventional cutting. This requires careful handling as the large log can easily damage the mill.

Automatic Pallet Boring

A COMMERCIAL PALLET PLANT has developed a double end boring machine carrying adjustable boring spindles for automatic boring of pallet facing boards. It is made up of standard boring units and trip switches operate the stop-boring mechanism. In this automatic boring operation pallet facing boards are run through an automatic double-end cutoff saw to offbear onto the feed conveyor to the boring machine. Each board is carried under the bits, held by cam-actuated hold-downs while nail holes are automatically bored in both ends and then is released to be delivered to a transverse conveyor leading to the nailing machine during the retraction of the bits to their normal position.

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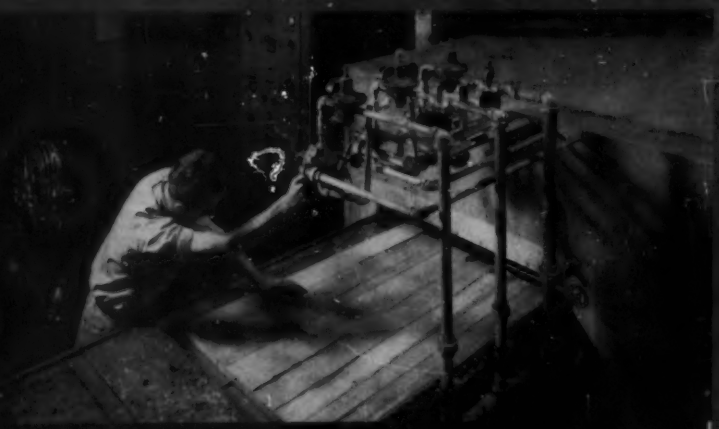

The initial quality of a glue joint and its durability under expected service conditions are important considerations when selecting a wood adhesive! Too, the right bond must also incorporate fast cures, easy clean-up and be adaptable to existing production equipment. Last but by no means least, the adhesive must also be low in cost!

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Cutter Head

Friedrick Utz, Aistag, (Neckar) Germany. U. S. 2,755,830. July 24, 1956. In planing machines, a cutter-carrying head comprising a body having cutter-receiving recesses formed therein and steel inserts embedded within said head and partially surrounding said recesses.

Rotary End Thrust Cutter

Carl H. Johnson, U. S. 2,755,831. July 24, 1956. A rotary cutting tool comprising a rotatable shank carrying a head rigidly secured at one end coaxial therewith.

Plywood Press Loaders

Robert A. Muller (To Atlas Plywood Corp.) U. S. 2,755,832. July 24, 1956. A loader rigidly fixed in side by side relation to press and including a plurality of spaced shelves each in substantially the same plane as the adjacent press plate.

Chair with Pivoted Back

Alfred C. Hoven and Walter E. Nordmark (to American Seating Co.) U. S. 2,755,844. July 24, 1956. In a chair: spaced upright back supports; a pin mounted on upper portions of back supports and extending horizontally therebetween; and a mounting plate.

K. D. Chair

William L. Shepherdson (1/3 to J. E. Meacham and 1/3 to Hardy A. Norvill). U. S. 2,755,846. July 24, 1956. A K. D. chair or the like having a left leg side frame including a side rail, a right leg side frame including a side rail, and a back frame demountably connected to said side frames.

Melamine Purification

Leslie G. Boatright (to American Cyanamid Co.) U. S. 2,755,887. July 24, 1956. The process of recovering substantially pure solid melamine from a vapor steam issuing from a urea to melamine reactor.

Gutter Board for Prefab Panels

Milton Male (to U. S. Steel Corp.) U. S. 2,755,893. July 24, 1956. A horizontal gutter board on the exterior of prefabricated side wall.

Crusher Housing

Edgar R. Brake (to Jeffrey Mfg. Co.) U. S. 2,756,002. July 24, 1956. A crusher housing adapted to be mounted on a fixed base.

Router Attachment

James H. Godfrey (to Stanley Works). U. S. 2,756,785. July 31, 1956. Edge trimming means for use with router having a base and an axially adjustable rotatable spindle.

Bark Removing Machine

Bruno Balo, Lohja, Finland. U. S. 2,756,786. July 31, 1956. A self-adjusting log peeler comprising a support, at least one elongate cutter element for removing bark from log moving axially and relatively thereto.

Feeding Mechanism for Rechippers

Marion F. Fish and Adelbert E. Small (to Sumner Iron Works). U. S. 2,756,788. July 31, 1956. A chipper comprising an anvil across which material to be chipped is advanced, power operated knives

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arranged for successively coacting with said anvil to reduce it to chips.

Concave Moulding Circular Saw Blade

Henry Siese. U. S. 2,756,787. July 31, 1956. A tri-lobar saw blade disc, the lobes on said disc being symmetrically located around the axis thereof.

Lumber Working Fixture

Mario J. Gilardino. U. S. 2,756,509. July 31, 1956. A device comprising in combination, a rigid holder having parallel vertical side faces and a horizontal lower side for resting on support.

Production of Hot-Pressed Hardboard

George B. Matter, Jr. (to Weyerhaeuser Timber Co.). U. S. 2,757,113. July 31, 1956. Method which comprises forming a felt of wood fibers of substantially uniform content of fiber material by weight not more than 40% total moisture content.

Manufacture of Glazed Hardboard

James R. Roberts (to Weyerhaeuser Timber Co.). U. S. 2,757,114. July 31, 1956. A method which comprises forming a felt of wood fibers said fibers consisting of substantially all the substance of the wood from which the fibers are derived, the felt having a moisture content in the range from 8 to 35%.

Method of Making Felted Lignocellulose Products

Clark C. Heritage (to Weyerhaeuser Timber Co.). U. S. 2,757,115. July 31, 1956. Process of making consolidated fibrous products which comprises defiberizing lignocellulose by rubbing and abrading it while contemporaneously subjecting it to an atmosphere of steam.

Structural Panel and Method of Making Same

MacMillan Clements. U. S. 2,757,116. July 31, 1956. Method of making a panel for use in building construction and refrigerators.

Manufacture of Thermosetting Cellulosic Particle Compositions

Clark C. Heritage (to Weyerhaeuser Timber Co. and Wood Conversion Co.). U. S. 2,757,148. July 31, 1956. Process comprising forming a stream of moist cellulosic particles in a gaseous environment, continuously introducing into said stream an aqueous solution of thermosetting phenol-formaldehyde resin.

Reactive Precipitation of Resin On Fibers

Clark C. Heritage (to Weyerhaeuser Timber Co. and Wood Conversion Co.). U. S. 2,757,149. July 31, 1956. The method comprises mixing in a gaseous environment particles containing substantially all the organic substance of whole wood in forms with a predetermined amount of aqueous solution of thermosetting resin solids.

Hard Fiberboards

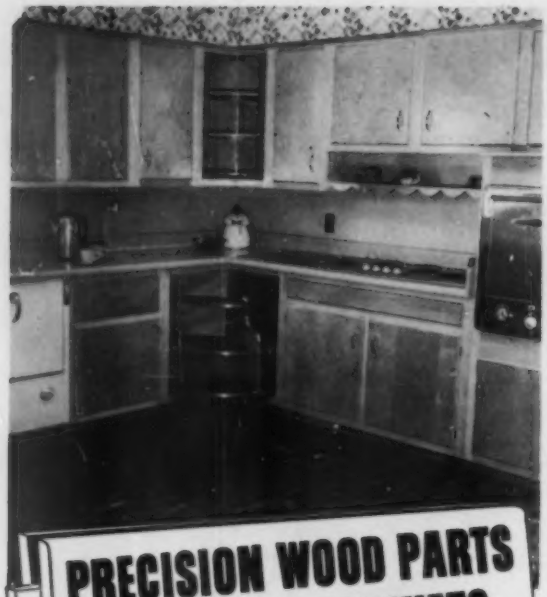
Hermann Basler, Munich, Germany. U. S. 2,757,583. Aug. 7, 1956. Method for the manufacture of hard fiber board.

Combination Seat, Table and Benches

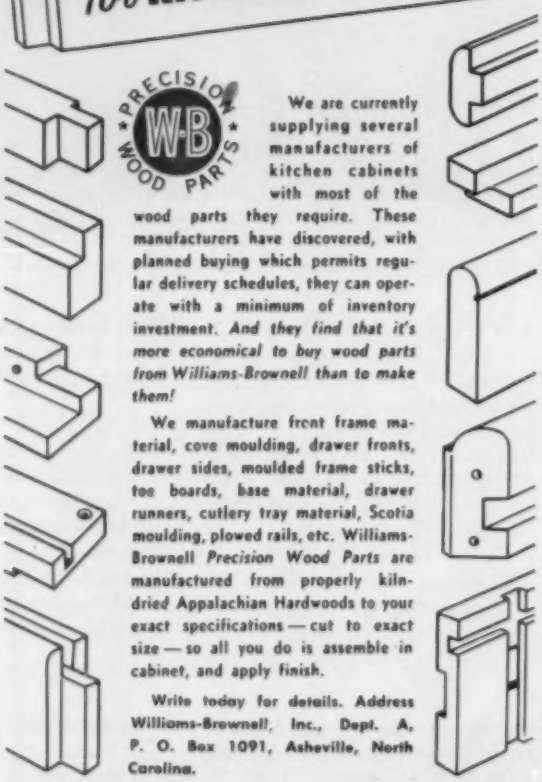
Mellvin D. Jerdee. U. S. 2,757,713. Aug. 7, 1956. Apparatus interchangeably including different articles of furniture.

Showcase

Henry S. Berry and Julia H. Berry. U. S. 2,758,000. Aug. 7, 1956. A display and merchandising cabinet.



PRECISION WOOD PARTS for KITCHEN CABINETS



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We are currently supplying several manufacturers of kitchen cabinets with most of the wood parts they require. These manufacturers have discovered, with planned buying which permits regular delivery schedules, they can operate with a minimum of inventory investment. *And they find that it's more economical to buy wood parts from Williams-Brownell than to make them!*

We manufacture front frame material, cove moulding, drawer fronts, drawer sides, moulded frame sticks, toe boards, base material, drawer runners, cutlery tray material, Scotia moulding, plowed rails, etc. Williams-Brownell *Precision Wood Parts* are manufactured from properly kiln-dried Appalachian Hardwoods to your exact specifications — cut to exact size — so all you do is assemble in cabinet, and apply finish.

Write today for details. Address Williams-Brownell, Inc., Dept. A, P. O. Box 1091, Asheville, North Carolina.

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ESTABLISHED 1905

MORE PROFIT PER JOB . . . when you WELD WOOD ELECTRICALLY!

Workrite Electronic Welder Makes Perfect Bond in Seconds!

Model WP 2700

No dowels . . . no nails . . . no overnight clamping! Glue is set to perfect bond in 3 seconds by pulling trigger. Welds wet or dry woods, formica, masonite, micarta, etc.

Available in three powerful models

More for Your Money . . . with WORKRITE

- More time-saving power at this low price.
- Heavy-duty hand gun with NEW non-breakable legs.
- Maximum heat indicators located in gun and panel.
- 2700 watts of ELECTRONIC power for LESS than $650.00.
- PORTABLE models to take out on the job.
- Complies with U.S. Safety code—F.C.C. regulations.
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- Buy with confidence . . . We've been manufacturing since 1908.

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Serving the Industry Since 1852

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"Partners in Production"

WOODS TAPERED SPINDLE MOULDERS

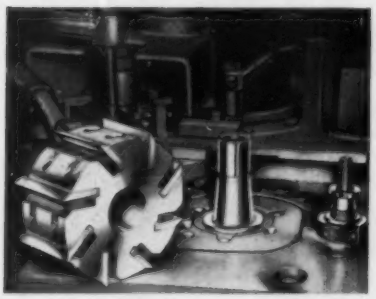
137 MT-6" 134 MT-8" 134 MT-10" 134 MT-12"

and

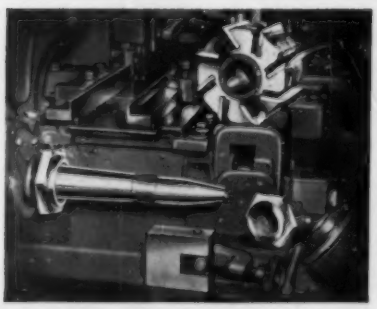
329 MT JOINTER and GRINDER

WOODS tapered spindles eliminate the use of sleeves and bushings in cutterheads, thereby giving a more rigid fit on the cutterhead spindles. Jointed knives in all cutterheads last longer on tapered spindles, improving the quality of work and increasing the production. Cutterheads on WOODS tapered spindles can be easily removed and sent to the tool room where grinding and jointing can be accomplished with greater accuracy and less effort. Elimination of jointing on machine allows moulder increased production time.

• Side Tapered Spindle



• Bottom Tapered Spindle



• 329 MT Jointer & Grinder with Tapered Spindles

If you are interested in higher production, better finish and economy of operation, write today to S.A. Woods Machine Company for the complete story of the outstanding advantages WOODS Tapered Spindle Moulder series has for you.

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27 DAMRELL STREET

BOSTON 27, MASS.

Branch Offices: ARK., Little Rock CALIF., San Mateo N. Y., Mount Vernon ORE., Portland TENN., Memphis N. C., Greensboro Canadian: B. C., Vancouver, Akhurst Mchy. Co. ONT., Galt, Canada Mchy. Co. Export Dept. United States Machinery Co., 90 Broad St., New York City

Furniture Packaging

Continued from Page 21

was nailed or screwed into the back post of the case with frequent disastrous results. It was almost impossible to remove the crating without leaving an ugly scar or a chipped out place in the back post.

The modern 2-F package is light weight, strong and attractive. The 2-F pack allows for no interior crating which may break and move about over the surface of the contents to spoil a fine finish.

In contrast, the 2-F package if properly done is virtually abrasion proof because of the soft, absorbent cellulose pad next to the finish. It is important to note that the 2-F package is a severe test for the finish of furniture, and only the most durable finishes will withstand the pressure pack. Because of the contact between packaging materials and the finished surface, any finishing material other than the most durable top coats will print under the weight of cases stacked one upon the other.

Several manufacturers have learned that their finish was not durable enough to permit their use of this modern package, and have been forced to improve their finish in order to use the 2-F package. In short, the general level of quality of furniture finish has been improved because of the use of pressure pack by more and more members of the furniture industry.

In order to utilize the package as something more than a protective device, progressive and sales promotion minded manufacturers have made efforts recently to convert the package into a merchandising device.

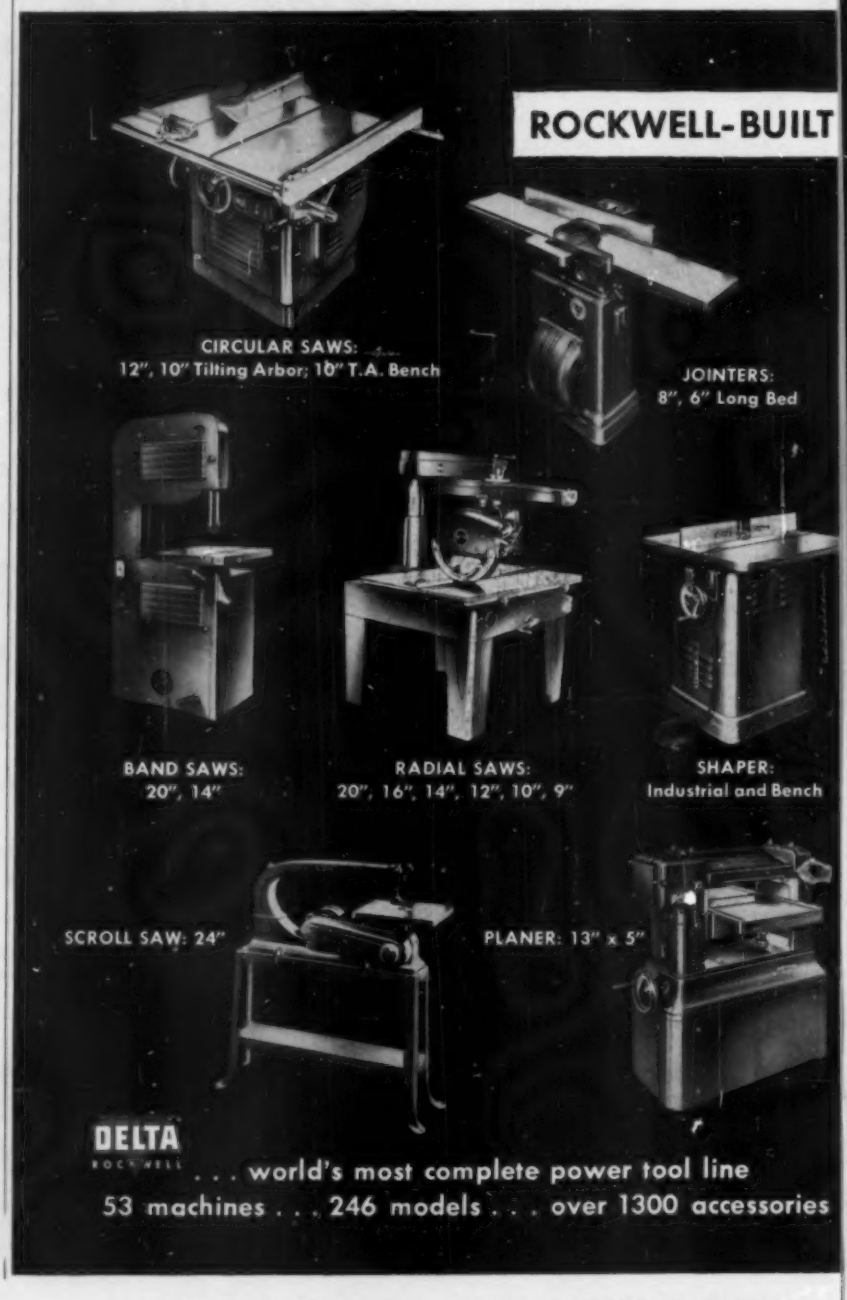
In addition to a constant improvement in the durability of the package, such features as "Zip Strip" or "Tear Strip" have been added. This innovation allows a tough fiberboard carton to be opened in a manner very much like that used to tear the top on a package of cigarettes.

At the insistence of progressive furniture manufacturers, the corrugated fiberboard box industry has developed techniques whereby a tough piece of cellulose tape can be fastened inside a carton, near the bottom, to permit the slitting of the carton by a firm, steady tug on the tape. A child can now open a well done 2-F or pressure pack case goods package without any tools.

If a manufacturer employs both truck and rail shipment, he must provide materials for packing all furniture for rail shipment unless he can predict accurately how much of his end product will move by truck. Some economies can be realized by predicting the volume of shipments via truck and packing accordingly.

It is important to note that the heaviest fiberboard and the finest innerpack are no protection against abusive and rough handling. Endless controversy exists among case goods manufacturers and carriers, both rail and trucking lines, over the matter of mishandling furniture.

If furniture manufacturers should attempt to develop a transportation proof package, the cost would be absolutely prohibitive. No pack has ever been devised to offset rough handling not only by carriers but by personnel in manufacturers' as well as retailers' warehouses. Periodically, we find it necessary to refresh memories of our own personnel as well as those of our carriers and our customers of the simple fact that our package is not proof against abuse. Constant attention to such details is probably the only way



to keep down the incidence of damage to shipments through mishandling.

Another important aspect of the packaging job which is made more practical by the use of 2-F pressure pack is the recently adopted practice of rubbing and packaging furniture to order. It has been a practice of long standing in the furniture industry to rub and pack furniture as it comes through the production line in the Finishing Room. Thereafter it has been either loaded in railroad cars or trucks or stacked in storage and warehouses.

If orders were slow in materializing packaged goods often sat in warehouses for many weeks or even months before being shipped. It is a well established conclusion that the quality of furniture suffers from long periods of storage in packages. Furthermore, if furniture is rushed through the process and packaged too quickly, careless workmen can hide their negligence in cartons.

Quality manufacturers now store their goods unrubbed and unpackaged and hold it in that state until orders come in. This makes for a great improvement in the rubbing job in that aged lacquer rubs to a much better surface than green lacquer. General quality also is improved by cases being stored in full view of anyone who may wish to inspect them.

Only the pressure pack, which is a production method, can be used in a production process necessitated by this rub and ship to order method.

What does the future hold in the way of improvements in the furniture packaging field? It is safe to say that the customer will continue to insist on a better pack -- better in terms of protection and decreased weight with its effect on freight rates.

Perhaps the next significant development in furniture packaging will be a pressure pack composed of a thin wrapping of tough paper or plastic over which will be sprayed a fast setting coat of foaming plastic to a thickness of about one-half inch, more or less. This coat will afford cushioning and will keep the product dry and free of dirt in transit.

The plastic coat could be stripped from the case at its destination and easily disposed of. Certainly, the furniture manufacturer looks forward to storing packaging materials in form of fluid plastics in tanks rather than in form of mountains of boxes and lumber which take up valuable space in warehouses and which tend to become obsolete.

It could be that rumors of a piggy back system of truck trailers, transported by coastwise ocean freighters from furniture south to New England and to California will materialize in the next few years. This would probably make today's seeming excellent methods and materials obsolete. Such a plan is predicted to materialize within the next two to three years.

Is it practical to assume that the furniture manufacturer of the future will ship all of his furniture by trucks, wrapped in quilts, at such a reduction in cost that the retailer will be able to provide his own reusable packaging materials for preserving cases in their warehouses?

Editor's Note.—*The foregoing paper was delivered by Mr. Freeman at the recent F.P.R.S. meeting in Asheville, N. C.*

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Thousands of shops across the country are cutting costs by using accurate, rugged, versatile Delta woodworking power tools to supplement—and often replace—heavy, expensive, single-purpose machines. You can, too, and here's why:

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SEE THE ENTIRE DELTA WOODWORKING LINE: And get the facts on how Delta tools can save on initial investment, on maintenance, on replacement—*then make up your own mind!* Your Delta Dealer is listed under "TOOLS" in the yellow pages.

Get all the Facts-- Today!

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another product by **ROCKWELL**

A WOOD Trading Post Ad will find Men—Materials—Machinery (See Page 72)

NLMA Votes Expanded Activities, Elects Leuthold

Climaxing the recent National Lumber Manufacturers Assn.'s annual meeting in Washington, D. C., was a vote by directors to expand activities and election of Walter M. Leuthold, board chairman, Deer Park Pine Industries, Inc., Deer Park, Washington, as president.

Lawrence D. Kellogg, president, L. D. Kellogg Lumber Co., Alexandria, La., and outgoing NLMA president, was elected board chairman, and N. Floyd McGowin, president, W. T. Smith Lumber Co., Chapman, Ala., first vice-president.

Regional vice-presidents elected were: A. L. Helmer, president, Western Pine Assn.; N. B. Giustina, president, West Coast Lumbermen's Assn.; Henry W. Jones, president, Southern Hardwood Producers, Inc.; and Leon Clancy, president, Southern Pine Assn.

One of the principal speakers was M. A. Hutcheson, president, United Brotherhood of Carpenters and Joiners, who suggested to manufacturer members that they join forces with union leaders to campaign against penalties of outmoded building codes and prohibitive insurance rates imposed on lumber and wood products in building construction (see Trends on page 7).

Another speaker, Albert W. Frey, professor of marketing, Dartmouth College, discussed the association's proposed national advertising program and urged members to first consider several questions involving the attitude of purchasers of lumber and wood products, and the extent they might be influenced by such a program.

Expanded activities voted by the board of directors included: a survey of trends in lumber demand beginning with lumber in home building; streamlining of lumber handling methods; continued investigation into promising research leads; and abandoning of a Forest Products Research Guide in favor of a year-to-year Research Inventory report.

(TOP) Elected NLMA president at recent annual meeting Walter M. Leuthold (center) is congratulated by Executive Vice-President Leo V. Bodine. At right is Henry Bahr, director of association's law information service (photo taken before Leuthold left the U. S. in October to attend international timber meeting in Geneva.) (CENTER) Regional vice-presidents elected are, l. to. r.: Leon Clancy; N. B. Giustina;; and Henry W. Jones. (BOTTOM) M. A. Hutcheson (center), one of principal speakers at meeting, shakes hands with Lawrence D. Kellogg, board chairman, while Richard G. Kimbell, vice-president in charge of technical affairs, looks on

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● You can keep payrolls down and avoid buying expensive machines if you use Wood Parts that are cut to size or partially fabricated by Weyerhaeuser. These parts are uniformly high in quality, and are delivered to your plant in the stage that best fits your manufacturing practices. Other advantages include reduction of waste, reduced inventory, and lower unit costs. Let us show you what Weyerhaeuser Pre-Cut Wood Parts can do for you. The parts are available in Ponderosa or Idaho White Pine and other Western softwoods.

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Send for your free copy of this valuable folder. It explains how many manufacturers are using Weyerhaeuser Wood Parts to reduce costs, increase profits.

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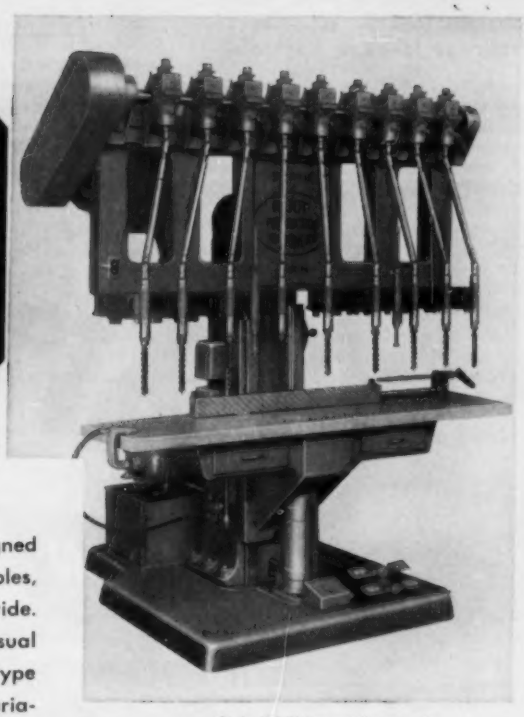
ROOT Universal Borers

a type and size for every need

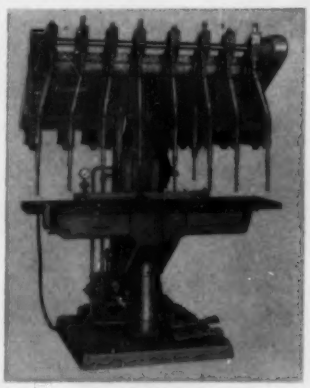


Style CH Universal Borer with hydraulically operated table

These Root universal borers are especially designed and built to handle boring patterns requiring up to 36 holes, and ranging over areas up to 8 ft. in length by 22 ins. wide. Because of their great productive capacity and unusual versatility they can handle in one pass, almost every type of multiple boring job regardless of hole pattern, or variations in hole depth, hole size and hole counterbore. Write today for full information—no obligation.

Max. Spindles	Max. Bore Area
STYLE CH	
14	4 ft. x 12 in.
18	5 ft. x 12 in.
22	6 ft. x 12 in.
26	8 ft. x 12 in.
STYLES CXH-S2 and CXH	
28	4 ft. x 22 in.
36	6 ft. x 22 in.
36	8 ft. x 22 in.
STYLE C-311	
12	4 ft. x 10 in.
STYLE C-311S2	
20	4 ft. x 17 in.

CXH-S2 Front Beam Universal Borer with hydraulically operated table



Style C311 Universal Borer with hydraulically operated table

CXH Regular universal Borer with hydraulically operated table

WWMA · WOODWORKING MACHINERY · MANUFACTURERS' ASSOCIATION

B. M. ROOT CO.

YORK — PENNA.

Machine Makers, Woodworkers Exchange Ideas at Rockford

MORE THAN 300 WOOD industry plant operating and production men and machinery representatives got together in Rockford, Ill., October 24-25, under the auspices of the Midwest Section, Forest Products Research Society, and discussed replacements for "clunkers" and ways and means of making the most of new and existing machinery, tools and equipment for greater production efficiency and economy.

The occasion was the annual fall meeting of the FPRS section. Technical sessions were held at the Hotel Faust both mornings, while the afternoons were devoted to working demonstrations of latest available machines at the plants of Mattison Machine Works, Greenlee Bros. & Co., Greenlee Tool Co., Ekstrom, Carlson & Co. and Solem Machine Co., in Rockford, and Yates-American Machine Co. and Wisconsin Knife Works, in nearby Beloit, Wis.

Ray C. DuBrucq, president, Woodworking Machinery Manufacturers Assn., was the speaker at the official luncheon over which L. J. Fitzpatrick, Madison, Wis., section chairman, presided. Program chairman was H. J. Gill, Jr., Carr, Adams & Collier Co., Dubuque, Iowa, and Mattison's Walter Hagstrom was meeting chairman.

At a session moderated by R. P. A. Johnson, U. S. Forest Products Laboratory, machinery men told the woodworkers what they had to offer, and at another session over which Greenlee's Judd Mansfield presided, furniture, plywood, millwork and prefabricated house manufacturers set forth their problems and needs.

Max D. Pretorius, sales manager, G. M. Diehl Machine Works, Inc., Wabash, Ind.; Karl J. Heinzelman, Jr., vice-president, Union Tool Corp., Warsaw, Ind.; John E. Hyler, Peoria, Ill., and Russell Gunnison, Wisconsin Knife Works, joined Greenlee's Russell Perkins and Solem's Mark Hoeper in representing the machinery makers' point of view.

The customer's side of the story was ably presented by Torbin Yates, Kroehler Mfg. Co., Naperville, Ill.; Ray Arduser, Farley & Loetscher Mfg. Co., Dubuque; Leonard Ropella, Roddis Plywood Corp., Marshfield, Wis., and Hoyd Price, vice-president, National Homes Corp., Lafayette, Ind.

Maintenance of woodworking machinery was discussed by Mattison's Gustaf A. Johnson. Cost reduction through conveyorization and other forms of better machinery utilization was discussed by H. J. Hockersmith, Walters Mfg. Co., Morristown, Tenn. Ralph T. Buscarello, industrial balancer department manager, Stewart-Warner Corp., Chicago, spoke on electrodynamic balancing of cutterheads. The MAPI method of equipment analysis, a scientific method of determining the right time for replacements, was explained by R. L. Rogers, works manager, Barber-Colman Co., Rockford.

Summing up, the woodworkers asked for machines and tools that would permit working to closer tolerances, more multi-purpose units, new machines to work scrap back into usable lumber, more automatic operation, less setup time, less noise, more efficient maintenance, better engineering service and greater safety provisions. On their part, the machinery makers demonstrated many advanced features, told of others to come, pointed to the need for a willingness to pay for special machines, and recommended more uniformity in woodworking plants performing the same end jobs.

At its annual meeting, the Midwest Section, FPRS, elected the following officers and trustees: Chairman, J. J. Allegretti, Masonite Corp., Chicago; vice-chairman, Dwight W. Bensend, Iowa State College, Ames; secretary, Robert Archambeault, National Casein Co., Chicago; treasurer (re-elected), William W. Kluender, Chicago & Northwestern Railroad, Chicago; trustees, William Mitchell, Forest Products Laboratory; Charles S. Walters, University of Illinois, L. J. Fitzpatrick, J. J. Fitzpatrick Lumber Co., and J. F. Koellisch, WOOD & WOOD PRODUCTS. Holdover trustees are H. J. Gill, Jr., Dubuque, and Wayne Lewis, Madison, Wis.

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Bee-Line
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CUT-OFF
SAW

Air-operated stroke, actuated by foot button, is smooth, rapid, cushioned at both ends. Stroke length instantly controllable by handy knob. Light weight achieved through aluminum alloy castings. New motor (5 or 7½ hp, 3450 rpm) is more compact, lighter. Capacity, up to 23" stroke.

PNEUMATIC CONTROL

STURDY MACHINE

Rugged construction throughout, using newest of design methods and materials. Special air cylinder has huskier piston rod, improved seals. Arbor diameter at saw blade is 1⅛", saw collars 6" diameter, to take either 16" or 18" saws. Filters keep sawdust out of motor, ram slide, other moving parts. Lubrication is largely automatic. Table equipment available if needed. *Write for detailed literature.*

DESIGNED FOR PRODUCTION

For continuous use, day after day, in the production lines of furniture, millwork, and other woodworking plants.

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NAMES and EVENTS

INDUSTRY NEWS

Georgia-Pacific Buys Hammond. Georgia-Pacific Corp., Portland, Ore., has purchased the assets of Hammond Lumber Co., including over 4 billion ft. of predominately California redwood timberland. Principal Hammond timber holdings in Humboldt County and main plants at Eureka and Samoa, Calif., are adjacent to Georgia-Pacific's major holdings to the north at Toledo and Coos Bay, Ore. The purchase brings Georgia-Pacific's timber holdings in the area to more than 12 billion ft.

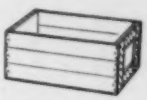
Hammond operations and properties will be integrated into Georgia-Pacific's diversified forest products operations. O. R. Cheatham, president, Georgia-Pacific, stated that the integration will not be completed until well into 1957. Operations will be conducted under the name of a wholly-owned subsidiary, Hammond-California Redwood Co., with Earl B. Birmingham, former president of Hammond, as president.

Sash & Door Group Officers. L. C. Croft, manager, Iroquois Door Co., Syracuse, N. Y., was elected president of Northern Sash & Door Jobbers Assn. at the recent 15th annual meeting in Washington, D. C. Thomas Marquart, Marquart Millwork Co., Oshkosh, Wis., was elected vice-president, and S. D. Griffeth, Midwest Jobbers, Inc., Chicago, and C. W. Nagle, Chicago were re-elected treasurer and secretary, respectively.

Hardwood Plywood Meeting. Hardwood Plywood Institute's recent fall meeting in Washington, D. C., featured complete review of the group's public relations program, with R. D. Behm, trade promotion director, leading the discussion. Another main item of discussion was the impact being

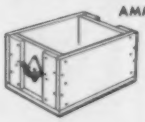
SHOWN STUDYING a large display map which described the story of southern hardwoods at the recent 56th annual meeting of the Society of American Foresters in Memphis, Tenn., are l. to r.: Monty Payne, chairman of Forestry Committee of Mississippi Delta Council; J. A. Putnam of the Delta Research Center, U. S. Forest Service; W. W. May, forestry agent, Illinois Central Railroad; W. W. Dannenberg, woodland superintendent, U. S. Gypsum Co.; Walt Guyer, chief forester, Anderson-Tully Co., and little Miss Guyer. Each state shown on the map was fashioned of veneer from a different kind of hardwood tree. The photographs to one side of the map illustrated various good hardwood forests.

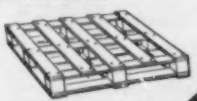
BATHTUB CRATES


INDUSTRIAL BOXES

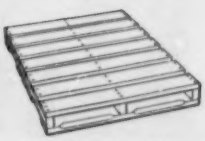
WHAT IS YOUR NAILING PROBLEM?

BED SPRING FRAMES


AMMUNITION BOXES


EXPENDABLE PALLETS

WINGTANK CRATES


WAREHOUSE PALLETS

FMC HAS THE ANSWER

Many of the problems of industrial nailing which are troublesome to you today, may have already been successfully studied and solved by FMC nailing machine design and application engineers.

Problems arising from countless combinations of woods, materials, nailing patterns, speeds, space, manpower, pressures, feeds, mechanics, hydraulics and other variables have been resolved by our engineering department. From hundreds of case histories FMC can counsel with you on all phases of automatic nailing.

Hand us your nailing problem. We believe we can give you a successful FMC answer to it from the scores of types, sizes and models of FMC nailing machines which have been built and are in successful operation by firms like yourself—who once also had a nailing problem!

WRITE, giving us full details—or request Bulletin.

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☐ *General Purpose Nailer* ☐ *Pallet Maker* ☐ *Multiple Spindle Drive Screw Driver*

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made on domestic manufacturers by the unrestricted volume growth of imported plywood. Also presented to members were ground rules, based on commercial standard (CS 35-56) on hardwood plywood released Oct. 1, for use of HPI trademarks and certificates of inspection.

Prefab Panel Discussion. A panel discussion on "Wood Prefabricated Housing" was held during the recent 77th annual meeting of the American Society of Mechanical Engineers in New York. Subjects treated were: use of wood fiber and hardboards; economics of wood constructions; advantages of factory constructions; designs and layouts.

NEWLY ELECTED OFFICERS of Architectural Woodwork Institute are, l. to r.: F. P. Delany, treasurer; Elmer Root, third vice-president; Claude Twiellenmeier, first vice-president; C. A. Rinehimer, chairman of the board; C. Albert Carlson, president; W. L. Otis, second vice-president

AWI Re-elects Carlson. C. Albert Carlson, Aaron Carlson, Inc., Minneapolis, was re-elected president of the Architectural Woodwork Institute at the recent fourth annual convention in Chicago. Other officers elected were: C. A. Rinehimer, Rinehimer Bros. Mfg. Co., Elgin, Ill., chairman of the board; Claude Twiellenmeier, Crescent Planing Mill Co., St. Louis, first vice-president; W. L. Otis, Columbia Lumber & Mfg. Co., Columbia, S. C., second vice-president; Elmer Root, Standard Mfg. Co., Appleton, Wis., third vice-president; F. P. Delany, Metz Mfg. Co., Dubuque, Iowa, treasurer; Byrne Marcellus Co., Chicago, secretary-manager.

New Stem Series. Rare or exotic species of wood will be featured in the 1957 advertising program of Chester B. Stem, Inc., New Albany, Ind. Carrying out the theme, "Do You Know This Tree," each advertisement will include a photograph of the standing tree featured for the month—in some instances a species never reproduced in print before. It is reported that these photographs took over two years to complete because of the inaccessibility of many of the jungle-grown trees. Macassar Ebony, Zebrawood, Hawaiian

Get Better, Lower-Cost Fuel From Waste Wood!

Typical automatic installation in many plants. All wood scrap is conveyed to the hog; then chips are blown to fuel bin. In some installations, chips are blown to a stoker which feeds them into boiler or furnace; in other cases, chips are blown directly into fire box.

Cross section of "No-Nife" Hog showing how fast-moving chisel-edge hammer reduces wood by impact until properly sized to pass through grates in bottom of hog.

WILLIAMS "No-Nife" HOGS

When reduced to chips in a "No-Nife" Hog, wood scrap is 100% combustible—the cheapest of any fuel for producing heat and power. Money-wasting unhogged wood refuse won't burn evenly, restricts air flow, smothers the fire, causes excessive smoke and soot.

By hogging, handling costs are also reduced up to 75%. One man can handle as much tonnage in chip form as three men can handle in long lengths, awkward and odd-shaped pieces. In most installations, labor savings alone pays for a "No-Nife" Hog in a few months.

Williams builds a complete line: Hogs, Grinders & Shredders • Vibrating Screens • Air & Mechanical Separators Heavy Duty Fans • Cyclone Collectors.

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CRUSHERS GRINDERS SHREDDERS
OLDEST AND LARGEST MANUFACTURER OF HAMMER MILLS IN THE WORLD

NEW OFFICERS of FPRS Midwest Section are, seated l. to r.: Chairman, J. J. Allegretti, Masonite Corp., Chicago; Vice-Chairman, D. W. Bensend, Iowa State College, Ames, Iowa; Secretary, Robert Archambeault, National Casein Co., Chicago; Treasurer, W. A. Kluender, C. & N. W. Railway System, Chicago; standing: Trustee, J. F. Koellisch, WOOD AND WOOD PRODUCTS, Chicago; Trustee, H. J. Gill, Jr., Carr, Adams & Collier Co., Dubuque, Iowa; Trustee and Past Chairman, L. J. Fitzpatrick, J. J. Fitzpatrick Lumber Co., Madison, Wis.; and North-Central Regional Board Member, Robert L. Hiller, American Cyanamid Co., Hartland, Wis. Trustees not present are: W. C. Lewis and W. W. Mitchell, U. S. Forest Products Laboratory, Madison, Wis.; and Prof. C. S. Walters, University of Illinois, Urbana, Ill.

Koa, Swiss Pear and Brazilian Rosewood are a few of the romantic-sounding names to be featured in this unusual series.

Kroehler Buys Mengel. Kroehler Manufacturing Co., Naperville, Ill., has acquired the furniture division of Mengel Co., Louisville, Ky., expanding its U. S. distribution of case goods from 11 Midwestern states to include the entire country, according to D. L. Kroehler, president. The Mengel division will be operated as a wholly-owned subsidiary and will continue to be headed by H. Keith Williams, who has been elected a vice-president of Kroehler. There will be no changes in personnel. The division is the 10th purchase in Kroehler's 64-year history.

Hanlon Elected NHLA Head. Howard A. Hanlon (see Wood Salute on page 74) was elected 30th president of National Hardwood Lumber Assn. at the closing session of the group's recent 59th annual convention in Chicago. He succeeds T. M. Millet, Louisville, Ky., who was named to the executive committee. Also elected were: F. T. Griffin, Chicago, first vice-president; Bernard Bock, Montreal, Canada, second vice-president; and Mark Townsend, Stuttgart, Ark., third vice-president.

Interesting highlight of the second morning's session was guest speaker William LeClair, secretary of Canadian Lumbermen's Assn., who gave members a detailed report of his recent extended trip through Soviet Russia.

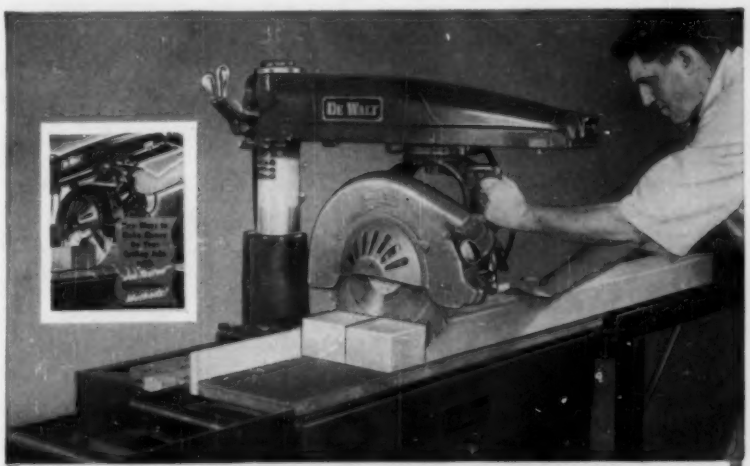
Other featured speakers included: Honorable A. B. Chandler, Governor of the State of Kentucky, who spoke on conservation of natural resources approached through cooperation between federal and state governments and lumber and forestry industries; Dr. A. P. Haake, economist and consultant to General Motors, whose speech was entitled, "What's Ahead for America"; and E. A. Clevenger, vice-president, Corley Mfg. Co., Chattanooga, Tenn., who covered ways and means of improving mill operations.

RECENT VISITOR to the Mengel Co., Louisville, Ky., was Nana Boa Amponsem III (center), paramount chief and president of the two Denkyira States of Africa's Gold Coast, shown with J. H. Miner (left), manager of Mengel's mahogany department, and C. B. Walker, plant superintendent, inspecting his nation's mahogany and Gold Coast cherry in company yard.

Ellwood to Head Research. Eric L. Ellwood, 1953 graduate student winner of the annual WOOD Award competition sponsored by WOOD & WOOD PRODUCTS for the best research paper in the field of wood products, will head research in timber physics at the University of California Forest Products Laboratory, Berkeley, Calif., beginning Feb. 1, 1957. At present he is a staff member of the Commonwealth Scientific Research Organization, Melbourne, Australia.

Simpson Integrates M & M. Simpson Logging Co., Shelton, Wash., has completed integration into a single division of plywood and door plants acquired in its recent purchase of M & M Wood Working Co., Portland, Ore. Hal W. McClary has been named manager of the division. Harold Johns, Simpson's plywood and door sales manager, has been transferred from Shelton to sales offices established in the former M & M headquarters in Portland.

Hardwood Grading Course. Cooperative Extension Service and the Department of Forest Products will sponsor a hardwood lumber grading course at Michigan State University, East Lansing, Mich., Jan. 7-11, instructed by Erwin S. Gutsell, inspector and field representative of the National



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Hardwood Lumber Assn. The first two days will cover a study, explanation and discussion of rules; the last three actual grading of lumber—in the classroom and at the university sawmill.

Redwood Ambassadors "Hit the Road." Philip T. Farnsworth, executive vice-president, California Redwood Assn., and other executives of the association initiated their "on the road" program as ambassadors of the redwood industry at an advisory conference with eastern and midwestern sales managers in Chicago, Oct. 23.

In November, Farnsworth and S. J. Sharp, secretary, attended the annual meeting of the National Lumber Manufacturers Assn. in Washington, D. C., following which the former attended the American Forest Products Industries, Inc., meeting in Washington, and the latter the American Lumber Standards Committee meeting. All members of the ambassador group made extensive field calls on the press, architects, and retailers and wholesalers in the East, Midwest and Southwest during the 30-day program.

FPRS Section to Stress Utilization. The annual meeting of the Georgia-Alabama-Florida section, Forest Products Research Society, in Athens, Ga., Dec. 7-8, will highlight the theme, "Hardwood Utilization," by covering important phases in the use of hardwoods. Members will see hardwood research work being accomplished at the Athens-Macon Research Center.

Council Elects Officers. Walter F. Holzer, product manager, Crown Zellerbach Corp., San Francisco, was elected chairman of the Technical Advisory Council, University of California Forest Products Laboratory, Berkeley, Calif., at a recent council meeting in Berkeley. A. William Agnew, vice-president, Pacific Coast Co., Sonoma, Calif., was elected vice-chairman, and Russell Bjorn, manager, Sub and Material Contractors Assn., San Rafael, Calif., secretary. Outgoing chairman is Earl B. Birmingham, president, Hammond Lumber Co., San Francisco.

FPRS Group Tours Plants. Plant tours through American Seating Co. and the Door Division, Haskelite Mfg. Co., both located in Grand Rapids, Mich., highlighted the recent annual meeting of the Great Lakes section, Forest Products Research Society, in Grand Rapids. Julius Adams of Haskelite, and Wayne Hutchins of American Seating conducted the tours. Allen Dibble, National Homes, Lafayette, Ind., speaker at one of the sessions, discussed the changing attitudes and markets of the prefabricated homes industry.

Fixture Group Tours Woodwork Corp. One of the highlights of the recent fall meeting of the National Association of Store Fixture Manufacturers in Chicago was a tour of the Woodwork Corporation of America, conducted by Frank Stulik, vice-president of the firm and director of the association.

Coast Furniture Group Meets. Henry Brandler, executive vice-president, L. A. Period Furniture Mfg. Co., was elected president of the Furniture Manufacturers Association of California at the recent 8th annual convention and supply show in Los Angeles. He succeeds H. J. Malerstein, who was named treasurer. Hubert Jordan, co-owner, Brown-Jordan Co., Pasadena, Calif., was elected vice-president, and Eddy S. Feldman was renamed executive secretary.

Members voted to change the association's name from Furniture Manufacturers Associations of Southern California, by dropping the word "Southern" from the title.

NOTES ABOUT SUPPLIERS

United States Plywood Corp., New York, has opened a branch at Santa Ana, Calif., including warehouse and office. Beryl Abbott has been appointed manager of the branch.

National Starch Products, Inc., New York, has purchased all capital stock of Granite Board, Inc., Goffstown, N. Y., according to Frank Greenwall,

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president of National. Herbert A. Hermsdorf, president of Granite Board, will continue in that capacity. The marketing of the board will be consolidated with National's Structural Products Department.

PERSONNEL CHANGES

R. V. Reynolds

Rex V. Reynolds, has been named manager of woodworking industry sales for Kennametal, Inc., Latrobe, Pa., according to **Bennett Burgoon, Jr.**, sales manager. He will be assisted by **Don A. Curtis**, formerly associated with Curtis Machine Corp., Jamestown, N. Y. **Joseph L. Kane**, Rear Admiral U.S.N., retired, has been elected a vice-president, to serve as co-ordinator of the firm's activities with government defense agencies.

C. R. Onsrud

Charles R. Onsrud has been appointed general manager of Onsrud Machine Works, Inc., Woodworking Division, Chicago, representing the third generation of the Onsrud family to become an executive member of the company.

Charles W. Snyder, formerly Philadelphia district sales manager, has been named to the newly-created position of industrial sales specialist for DeWalt, Inc., Lancaster, Pa., according to **Conde Hamlin**, president. He will be succeeded by **Howard L. Hershock**.

C. L. Slade has been promoted to superintendent of the Richmond, Va., plant, Wood Preserving Division, Koppers Co., Inc.

E. L. Ellis

Everett L. Ellis, formerly in charge of wood technology in the College of Forestry at the University of Idaho, has been appointed associate professor of wood technology at the University of Michigan's School of Natural Resources, Ann Arbor, Mich.

Robert C. Gray has been promoted to manager of Dryalator domestic sales for Orr & Sembower, Inc., Reading, Pa., according to **Frederick H. Klein**, president.

Robert Logie has been appointed executive vice-president and member of the board of directors of Firth-Sterling, Inc., Pittsburgh, Pa., according to **Kenneth D. Mann**, president.

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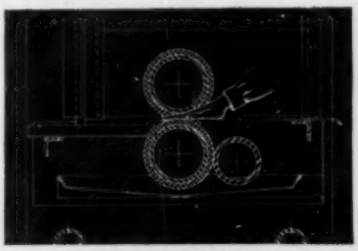
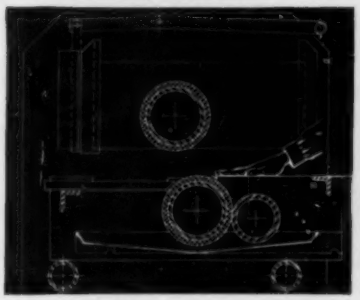


OLD METHOD



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HOWARD A. HANLON

THE MAN ELECTED the 30th president of the National Hardwood Lumber Association this year is truly a "lumberman's lumberman". He was born to a family long in the lumber business at Ridgebury, Pa., in 1896. Starting at an early age as a water boy and camp helper in his father's woods and mill operations, he worked up through jobs as log rafter, teamster, sawyer, grader, salesman and finally a mill operator on a wide scale.

He has operated mills in over a half dozen states in the North and South. At present, in addition to the mill and distribution yard at Odessa and Cayuta, N. Y., he is president of Ashepoo River Lumber Co., Ashepoo, S. C.; Interstate Hardwood Lumber Co., Elizabeth, N. J., and Ireland Mill and Supply Co., Cayuta, N. Y.

Over the years, Mr. Hanlon has been liberal with his time and experience for his fellow lumbermen and invariably in the forefront of causes furthering the progress of forestry, sawmilling and wood utilization. In addition to serving as an officer and director of NHLA since 1948 and a member since 1930, he is a past president of the Northeastern Lumber Manufacturers Association, a founder and officer of the Penn York Lumbermen's Club, and has served on the New York Forest Industries and Keep New York Green committees.

Additionally he has been active in the Adirondack Lumbermen's Association and served on committees of the National Lumber Manufacturers Association for a number of years. He gave much needed help and guidance to the lumber industry and the government during World War II.

He is an intrepid fighter for individual rights and initiative and the inspiring talk which he gave at a recent NHLA convention titled "The Old Order Changeth" will long be remembered. In 1943 he published a book "Vanquished Americans" which is still in frequent demand though unfortunately out of print.

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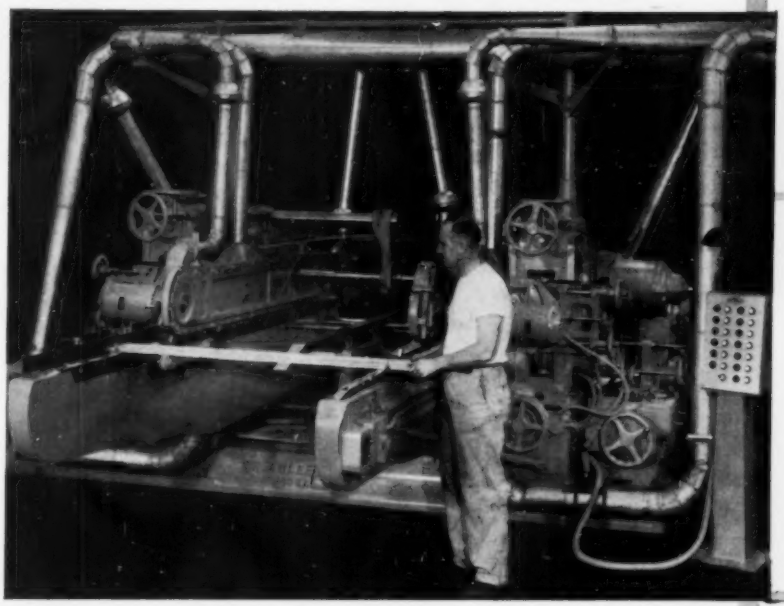

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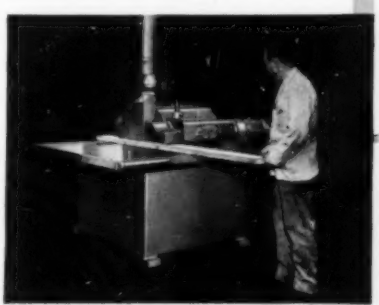

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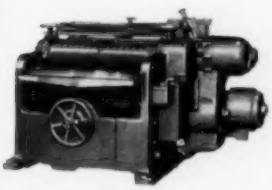

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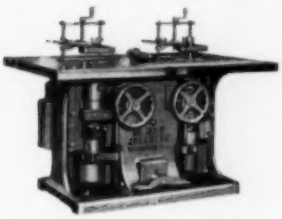

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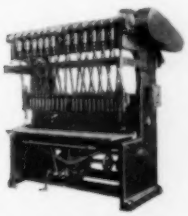

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Handles wide variety of work calling for numerous holes on close centers. Wide range of lengths and spindle sizes available.

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